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EDITORIAL.

EUROPEAN CHRONICLES.

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SERO-THERAPY AND ANAPHYLAXY.—Sero-therapy is gaining ground rapidly almost every day; and many already are the diseases that are now controlled by this mode of treatment. There has been, however, some instances where accidents have occurred by the fact of sero-therapy treatment, which are likely to be sufficient to limit temporarily the practice recently introduced. Instances of this may be taken from the report that I read in the *Presse Medicale,* where are related the history of three observations of cerebro-spinal meningitis treated by the use of antimeningococcic serum, which had given in the treatment of this disease marvelous effects. In these three observations the injection of the serum had been done in the vertebral canal for several days in succession and the three cases ended fatally. In the presence of such results the important question which presented itself was, *What was the cause of those accidents?*

To which the proper answer was that it seemed to be that they were anaphylactic accidents, and that anaphylaxy was the cause of these deaths. These accidents presenting in fact great analogies with similar clinical accidents observed by Besredka in his experiments.

Guinea pigs, which had twelve days before received a small subcutaneous injection of equine serum, were inoculated by Besredka under the dura mater with ¼ of c. c. of the same serum.

Immediately these animals exhibited very severe accidents (convulsions, collapsus), and almost all died in two or three minutes. Sensibilized guinea pigs do not react, if instead of equine serum another liquid is injected in their brain, and likewise fresh animals had no visible trouble after the intra cerebral injection of ¼ of c. c. of horse serum. These experiments show, therefore, that anaphylactic accidents are constant after the intra-cerebral injections and only noticed in 25 per cent. of animals where the injections are made in the peritoneum or in the veins. And again, while a dose rather large (at least 5 c. c.) may give rise to accidents by intra-peritoneal injection, a minute dose is sufficient to produce these if injected by intra-cerebral inoculation. Accidents of serial anaphylaxy are then more to be feared when the serum is injected in the proximity of the nervous centers.

To remedy this dangerous condition, a preventive treatment against anaphylactic troubles has been looked for by many experimenters. Attempts to modify the serum by physical or chemical agents, so as to reduce or to suppress its toxicity without modifying its therapeutic properties, the action of heat at 100° C. for twenty minutes or again at 50° for an hour during four days. But the results have not been entirely satisfactory.

As the toxicity of the serum could not be suppressed, it was attempted to try to act upon the sensibilized animal himself in rendering him refractory to a new injection of serum. The action of anæsthetics, ether or alcohol, was tried. They confer an antianaphylactic immunity undoubtful, but it is only of short duration. A lasting immunization against serial anaphylaxy can be obtained in vaccinating animals with the serum itself.

Besredka has proposed a simpler and easier way to be applied practically. To render a guinea pig refractory to the fatal injection of a deadly dose of serum in the brain, all there is to do is to inject the day previous or only several hours before, a small quantity of serum in the rectum. Or again to inoculate under the skin an extremely weak dose of this serum.

This method has just been put in practice in Roumania by Alexandresca and Ciucia. In that country, to vaccinate bovines

against bacteridian anthrax, a mixture of vaccine and anti-bacteridian serum is used. As the animals are vaccinated at least once every year and in case of epizooty several times a year, they often present slight or again serious anaphylactic accidents. To avoid them, Alexandresca and Ciucia resorted to the method of Besredka. Having 180 head of cattle to vaccinate, they divided them in two lots of ninety each. Those of one lot received an injection of 1 c. c. of antibacteridian serum under the skin, then five hours after the vaccinating mixture of 5 c. c. of serum and 1 of vaccine. None of the animals presented serial accidents. The animals of the other lot received the same dose of the mixture of serum and vaccine, without having had the previous injection of a small quantity of serum; they manifested anaphylactic accidents in the proportion of 1 out of 9.

A last method to overcome these accidents as long as they are quite rigorously specific, would be to inject into subjects sensibilized by a first injection of equine serum, that of another animal, sheep serum for instance. Of course much yet remains to be found out, but as far as the prophylaxy in veterinary application is concerned, the experiments of Roumania deserve much attention.

* * *

Experimental Treatment of Piroplasmosis.—Judging from veterinary literature, no treatment has been known to this day, possessing a curative action on piroplasmosis, and yet they are affections which cause enormous losses principally in America, in Africa and Australia, as well as in some other countries where the mortality is at times very high. To find a curative treatment was, therefore, an important practical question, and according to *Parasitology*, two learned professors of the University of Cambridge, G. Nuttall and S. Hadwen, seemed to have succeeded in finding one in the use of two special tinctures, the trypan-blue and the trypan-red. They first experimented with it on dogs and afterwards on bovines, and for both species the results have been very satisfactory. These have been resumed

in a special work from which interesting conclusions are here presented.

In relation to canine piroplasmoses, after considering the drugs which have proved inefficacious, those of doubtful value and those which seemed to have produced some effects, G. Nuttall writes on the positive curative or preventive effects obtained by the use of trypan-blue: "This drug has indeed not only a curative effect, but when it is used early it may prevent the apparition of the parasites in the blood of dogs. Without effects when given per mouth, it must be injected sub-cutaneously or in the veins in doses of 5, 10 or 20 c. c. of a 1 per cent. solution, according to age and weight of the animal. Trypan-red can also be used, but its properties are more irritating. In dogs cured by this treatment, the blood remains infectious for six or seven months or even more, after treatment. They resist reinoculations with virulent blood taken from dogs affected with acute piroplasmosis. Trypan-blue and trypan-red have an action which is easy to appreciate. It is first indicated by the rapid disparition of the parasites. Those that remain are rounded, degenerated and finally cannot be detected with the microscope, and although they may reappear again in small number after few days, their presence is no longer manifested by external symptoms and the animals recover rapidly. Relapses may eventually occur again with the reappearance of the parasites, but they are very rare. The influence of the treatment on the fever is very marked. The temperature soon returns to normal and an acute attack is cut short. Recovered from this, dogs keep for a long time parasites in their blood, and if they are not literally cured they are at least "white washed."

* * *

The conclusions of the investigations of Nuttall and Hadwen on the application of the treatment in bovines can be concisely resumed. Trypan-blue promises to be an efficacious treatment against bovine piroplasmosis as the effects of the drug upon the P. Bovis is similar to that it has in dogs. The dividing forms are

the first to disappear, then the pyriform and the parasites appear degenerated, round or irregular. After from nine to forty-five hours or less, all have disappeared from the blood. As in canine piroplasmosis, their disparition may be temporary. Any how, the parasites disappear and reappear in animals which recover naturally. In some, they have returned in very small numbers after five or six days, while in others after sixteen or eighteen animals show no more symptoms and recovery follows:

It remains to be found out: 1. How long can the blood of animals treated show parasites after apparent recovery? 2. If the virulency of these parasites is attenuated in those animals thus recovered. 3. Can ticks be infected by the parasites?

The authors have experimented upon nine cows. Four were used as witnesses, five were treated with trypan-blue. Among the witnesses two took hemoglobinuria and one died, the other two had no hemoglobinuria and their disease was mild. Among the five treated all took hemoglobinuria and all recovered. In four of them hemoglobinuria was present before the treatment was begun.

The drug has always a more rapid action when given by intravenous injections. Doses of 100 to 200 c. c. in aqueous solution of the tincture were used, but smaller doses may prove as efficacious. Trypan-blue does not seem to have bad effects on cattle, but there is an objection to its being used: it colors the tissues and principally the subcutaneous. How long will this coloration last is interesting to know, as the animal is to be used for breeding or slaughtering.

Extensive experiments are to be made to demonstrate the practical value of the drugs, which, according to the authors might also be tried in the treatment of some blood parasitic diseases of sheep and also in bilious fever of horses.

* * *

TUBERCULIN IN DOMESTIC CARNIVOROUS ANIMALS.—Although the general application of one of Koch's discoveries, tuberculine, in veterinary medicine has given occasions for many valuable communications and the establishment of facts relating

to its use in the diagnosis of tuberculosis, and although the very different ways to take advantage of its properties have been time and time again related, there is probably a point which in our medicine is in need of more positive information than those that can be gathered from writings on the subject. That is the utilization of tuberculin in smaller domestic animals, dogs and cats. Among the many competitors for the prize that the late Director and Professor Trasbot has left to the Sociètè Centrale de Medecine Vétérinaire, there is one from adjunct Prof. M. Douville, of Alfort, on "Tuberculosis of Domestic Carnivorous Animals," (dogs and cats), with researches upon its clinical diagnosis and of which the larger part of the prize was given.

In that paper, Douville has treated extensively the question of the clinical diagnosis, and to confirm it rapidly he calls the attention to two methods to be readily applied: the research of the bacillus and the use of tuberculin. It is to this that I may be allowed to allude to-day, hoping that it will throw some positive light on the question by taking the conclusions presented:

1. With tuberculous dogs, tuberculin has an undoubtful specific action, indicated specially by a noticeable elevation of temperature.

2. According to the size of the animal, sub-cutaneous injections of from 5 to 15 centigrammes of tuberculin, produces ordinarily a rise in the temperature of 1 or 2 degrees, more seldom of 3.

3. The same dose injected to non-tuberculous dogs does not promote any appreciable rise.

4. The *febrile reaction* takes place *early,* appearing more commonly between the fifth and seventh hour after the injection, sometimes between the ninth or tenth. It lasts always several hours (four or five in average), and is often accompanied by general reaction (dullness, depressed condition, chills).

5. The duration and intensity of the reaction is not in proportion of the extent or severity of the lesions. It even seems more marked when the lesions are limited. *Open tuberculosis gives typical thermic reaction* (2 to 3 degrees).

6. With very extensively diseased and worn out subjects, there is almost no reaction. The temperature must be taken morning and evening, at least forty-eight hours before the injection, and the test is not to be applied, only when it is not above 39°. *It is necessary for the temperature to reach at least 40° and remain there for three or four hours* for a dog to be declared tuberculous. A thermic ascension equal or superior to 1.5° is not sufficient.

7. General reaction is not always present. The tuberculous toxin is not always hyperthermizing. It has been followed by a drop in the temperature in two cases.

8. Dogs like bovines present accoutumancy, but it is of short duration.

9. Failures may occur in 40 per cent. about of the cases tested; so much more frequently in severe and extensive tuberculosis. They have however, been noticed also in animal carriers of limited lesions.

10. Cats react poorly. Old subjects require only one-third or one half c. c. at the most. Free from tuberculosis, but having other senile organic lesions, they are very susceptible to tuberculin. Cuti, ophthalmo and intra dermic reactions have given Douville results not as satisfactory as the subcutaneous injection.

* * *

RABIES IN RUMINANTS.—The symptoms of bovine rabies have often attracted the attention of observers by their varieties, and veterinary publications as well as classical works have related them. In the *Revue de Pathologie Comparee* a long analysis has appeared on the clinical symptoms of rabies in huminants by veterinarian Bissauge, who gives of them the following good description.

Large Ruminants.—In the *dumb* or *quiet* form the animal remains calm; it only seems at the beginning of the disease, as if disturbed by a strange and motiveless anxiety; it carries the head high, and the dilated condition of the pupils of the eyes give them an unusual glance. The animal has spells of tem-

porary hallucinations and strikes with its horns or feet at imaginary objects. These spells are very short and often overlooked. In the digestive apparatus, the symptoms appear early. First the appetite is capricious, then comes complete anorexia, no rumination and signs of acute pharyngitis; swallowing is difficult first and then impossible. Saliva is foaming, abundantly flowing from the mouth. True hydrophobia does not exist and depraved appetite is the exception.

The test with a dog is far from being as important as it has been thought for a long time. All cattle have the habit of defending themselves more or less vigorously against any dog approaching. A symptom already very peculiar is the early apparition of a strong and continued tenesmus of the rectum. The point of inoculation is sometimes the seat of great itching. In both sexes genesical excitement is much marked. After twenty-four or forty-eight hours there is always weakness of the hind quarters. The animal moves with difficulty, walks staggering, it is hard for them to rise, and finally they cannot do it; paralysis is progressing and death follows.

Raving rabies offers a more accentuated picture. Irritation is greater, aggressive movements more serious, strong and frequent. The animal moans continuously, is excited by the slightest noise, light and specially man's voice. The uneasiness lasts longer, the animal strikes and scrapes the ground with his feet; he rushes against the manger if he is tied in the stable. Sometimes he bites his chain or the hay rack. He does not try to bite man or animals, but strikes at them with its natural means of defense. These spells are violent and intermittent.

Small Ruminants.—They are somewhat similar to those observed in cows. In the beginning there are frequent snuffling and grinding of the teeth. Animals are uneasy, become greatly excited and run in all directions carrying the head high. Their features ordinarily so quiet, suddenly assumes an expression of shyness as if they were wild, which is due to the dilatation of their pupils. Early, they have hallucinations and aggressive movements towards imaginary enemies. To the paroxysms of

excitement succeed periods of calm, when the sheep remains quiet, immobile with his head down, as in a state of coma. The rabid sheep has more than cattle a tendency to use his teeth against man, animals or surrounding objects. The region where it has been bitten is the seat of a very severe itching, and the sheep licks it or bites it with rage, without showing any pain. Death by general paralysis occurs in four or five days.

* * *

PEROXIDE OF HYDROGEN IN PNEUMONIA.—Having an outbreak of infectious pneumonia among a number of horses to deal with, an army veterinarian, Mr. Bonchet, decided to treat them with peroxide with the hope of helping the hematosis in his patients. His experiment is related in the *Revue Generale* where the case of his two pneumonics are recorded.

The oxygenated water he used was a solution at 12 volumes free from all impurities and without excess of acidity. The injections were intravenous and made in the jugulars. A few, however, were in the saphena, the spur vein and that of the forearm. Injected with the syringe of Pravaz, in doses varying between 40 and 150 c. c.; no more than 150 c. c. were ever given in one animal. Among the phenomena following immediately the operation, he observed that all the animals felt the injection, even in small doses. They presented a polypnea, sometimes a true dyspnea with increased and fuller inspiration, dilatation of the nostrils with an anxious glance and features. This was followed by evacuation of feces, accompanied with slight colic. After 10 or 15 minutes all these manifestations had passed off.

With peroxide the temperature is lowered. After each injection and as in direct proportion to the quantity of the injection, there always was a manifest drop in the temperature 6 8/10 of a degree and even of 1 full degree. For this reason it is better to divide the dose and give one in the morning and the other in the evening. The doses employed varied according to the elevation of the temperature and the thermic modifications presented, corresponding oscillations in the curves of the respiration, and circulation. The general condition improved every

day under that treatment, and not a single case of death or complications was observed. There were only two mild accidents. One horse had a bad spell of coughing as the injection was made, and at once an hemoptisy took place which lasted a few minutes. It did not return. The other, by a sudden movement while being injected, the trocar of the syringe was displaced and some of the peroxide was pushed in the cellular tissue surrounding the vein. A thick swelling resulted alongside the jugular. By proper treatment this subsided, but there remained a temporary obliteration of the vein which disappeared with due time. From this description it is certain that peroxide has given in this circumstance very handsome results.

Does the treatment deserve a place in the chapter of the therapy of pneumonia? Why not. It is easy to administer, not expensive, neat, without danger, can be carried out quickly and may justly be substituted to the administration of drugs per mouth. Can it be the only internal treatment to be used against pneumonia? Probably no. But it will prove a superior adjunct. Specially after its use has been improved.

So says Mr. Bonchet. Will others try it?

* * *

On Tuberculosis of Equine Origin.—Although tuberculosis is comparatively rarely met with in horses, and probably in some instances only as surprises of post mortem, their lesions, characters and virulent properties may not have received the attention that their close studies might suggest. And yet some interesting facts will spring out as in all scientific questions; they stimulate the researches of inquisitors and the results of the work done with possibly new discoveries or valuable statements are made known by the scientific press. Such has been the case following the discovery of three cases of tuberculosis in horses which was made by Drs. Morel and Julian and which gave them the opportunity for making some experimental researches with the tuberculous bacilli that they found in the lesions.

In one of the horses they found the sarcomatous form of tuberculosis with tubercles and caseous pneumonia, in the other

two they met with the miliary pulmonary tuberculosis and abscesses in the splēen. These diseased processes were accompanied with lesions which contained bacilli. They made cultures with the pus from the spleen and lungs in various media, glycerinated potatoes, horse serum, gelose, etc., and made numerous inoculations on guinea pigs, rabbits and pigeons, and related their experiments before the Société de Pathologie Comparèe at one of its meetings. They offered the general following conclusions:

1. Purulent tuberculous lesions and those with the sarcomatous form of the lungs are extremely rich in bacilli of Koch, contrary to those found in the miliary form.

2. These bacilli are very difficult to cultivate on classical glycerinated media, at least judging by the very numerous attempts that they have made and even after passage by guinea pigs and rabbits.

3. These animals are susceptible to the equine bacilli, but their reaction differs in duration and localization of the lesions, according to the mode of inoculation.

4. Pigeons inoculated by intramuscular or peritoneal injections even in repeated and massive doses (2 c. c.) are absolutely refractory.

5. Guinea pigs that were inoculated in the peritoneum died in 30, 31, 51, 71, 86 and 125 days with tuberculous peritonitis and glandular generalization. Those inoculated under the skin resisted 78, 104, 107, 188, 215 days. They presented the same symptoms and lesions.

6. Out of four rabbits inoculated, two died with acute miliary tuberculous peritonitis, one in 19 and the other in 34 days. The other two inoculated are yet living after 90 days. Rabbits inoculated under the skin resisted between 66 and 210 days. At post mortem of those, massive pulmonary lesions, very rich in bacilli were present.

7. The virulency did not seem to increase by passage from one guinea pig to another or from rabbit to rabbit.

* * *

RESORPTION OF TUBERCULOUS LESIONS IN BOVINES.—Prof. Calmette and C. Guerin made recently a communication before the Académie des Sciences of great importance relating as it does to vaccination of cattle against tuberculosis.

In preceding researches they have shown that the properties of the tuberculous bacillus could be modified by cultures, in series, on cooked potatoes, in pure bile of cattle, glycerinated at 5 per cent. and in presence of an excess of fluid.

Actually the two experimentators have a bovine bacillus of 23d passage, very little virulent for small animals of experiments, and which is tolerated very well by young bovines. Injected in doses of 100 milligrammes by intravenous injections, it gives rise to a typho-bacillose which lasts about one month, after which the animals have recovered, although they keep and also have for a long time after living bacilli in their bronchial glands. There is not immunization of the animal which has received the injection, but he is rendered more tolerant to the bacilli. Then taking serum from an animal hyperimmunized with bacilli cultivated on bile, which possesses a very great agglutinating power. Calmette and Guerin put it in contact during forty-eight hours with bacilli, cultivated on bile and in fine emulsion. This mixture, injected in the veins of bovines, considerably stimulates the resorption of the bacilli in the organism. Animals that have received the injections and which thirty days after the inoculation of the bacillus-serum were then injected intravenously with three milligrammes of very virulent bovine virus, were killed after 60, 90 and 120 days. The inoculations of their bronchial and mediastinal glands to guinea pigs showed that the virulent bacilli were almost completed resorbed after 90 days and totally after 120. In animals of control, inoculated at the same time with the same biliated bacilli without serum, the testing bacilli remained virulent in the same glands beyond 120 days.

These researches of the professors show for the first time that it is possible to have the organism resorb, in a relatively short time, 90 and 120 days very virulent bovine bacilli. It

seems as if a new practical and efficacious method to vaccinate bovines against tuberculosis might be found by this new discovery of the learned investigators.

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A Little Bibliography.—I believe that it is general with good students of medicine, almost as soon as they begin their studies, to provide themselves with a medical dictionary. As a rule these are good books. Those of Dunglinson, Keating, Thomas, J. S. Billings are well known amongst them, and yet some are possibly superior to others; or again some more complete than others. One objection, however, that may be applied to almost all is that they are not always up to the latest requirements. How could they be with the constant progresses of science, and consequently that while they contain the definition of most all the terms used in medical sciences, as perhaps years may have elapsed between the revision of a new edition, it is certain that in the space of time new words have found their way in current phraseology and use, and either the student or the practitioner that comes before them is at a loss for a definition which he cannot find in his dictionary, even the best known to him or his confrères.

Is there a remedy? I believe the little work which two physicians, MM. Garnier and Delamare, have issued here fills to a certain extent the want and might be followed by other writers. Their book is entitled " Dictionary of Technical Medical Words " (Dictionaire des termes techniques de medecine). I say it fills the want because I find in it a number of words whose definition I think ought to be there, and that I have failed to find in other dictionaries. I must, however, say that my collection goes back to several years, and perhaps new editions that I do not possess do what I am complaining of. It might be wise if works on biology, bacteriology and sero-therapy would give a concise dictionary of new terms as an index for the benefit of their readers. To substantiate these remarks, I may be permitted to give the definition of a few words which are of frequent use in recent

years and which students as well as medical readers may be pleased to possess and so avoid a useless research in their dictionary. In so doing I only imitate other medical and veterinary publications.

Agglutinine.—Substance contained in some sera, which has the property of gathering in an incoherent mass either the red corpuscles of the blood or the bacilli of a culture.

Aggressine.—Peculiar substances secreted by some bacterias and possessing an aggressive action towards the cells of the organism.

Alexine, Cytasis, Complement.—Albuminoid substance possessed of bactericid properties and which exist in all the seras. It is destroyed by heat at 55° C.

Antigene.—General term for all substances, microbes, toxines, red corpuscles of another species, etc., likely to promote the formation of anticorps.

Anticorps.—Any antagonistic substances, taking the defense of the organism: the hemo-agglutines and hemolysines against the red corpuscles, the bacteric-agglutines and bacteriolysines against microbes, the antitoxines against toxines. They are the agents of acquired immunity.

Bacteriolysis.—Dissolution of the bacteries. Action of certain liquids of the organism upon microbes.

Bacteriolysines.—Anticorps which attack microbes.

Hematolysis, Globulisis, Hemolysis.—The alteration or destruction of the red corpuscles by the anticorps. This destruction is characterized by the difference in diffusion of the hemoglobine outside of the corpuscle.

Hemolytic Sera.—Those that have the property to destroy the corpuscle.

Lysines.—General term applied to substances having the property to dissolve the red corpuscles, cells of tissues, bacterias and which reveal their presence only by this property.

Opsonines, Stimulines.—Substances able to combine chemically with microbes, to prepare them for phagocytosis. They

exist in the serum of fresh subjects and more abundantly in individuals artificially immunized.

Precipitines.—Substances formed in the serum of an organism when it is attacked by an antigene and which are able to give rise to the formation of a deposit in the serum of an organism attacked by the same antigene.

Sensibilatrice Amboceptor or again immunizing body, fixator, immunisine, phylocytasis.—Substance appearing in the serum of an animal, in which has been injected a microbe (vaccination) on an emulsion of red corpuscles, cells or albuminoid matters (antigene). It has the property to render susceptible to the action of alexine the microbe against which the animal has been vaccinated or against the antigene which he has received. The bactericid, hemolytic or cytolitic property of such a serum is then due to the action of two substances: one specific resisting a temperature of 55° C. called *Sensibilatrice,* and the other non-specific, anterior to the vaccination, existing in all the sera, destroyed at 55° and for which the name of *Alexine* is reserved.

A. L.

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THE SAN FRANCISCO MEETING—PERSONNEL OF INTERNATIONAL COMMISSION ON THE CONTROL OF BOVINE TUBERCULOSIS.

The great and enthusiastic gathering of veterinarians at San Francisco last month has borne out the REVIEW's prophecy in its September number, and during the entire year in fact, that the meeting on the Pacific slope would be the "greatest veterinary convention ever held in this country." For, while it was not the greatest from a numerical standpoint, we believe it may be justly accorded to be the greatest in things accomplished.

It was a great achievement on the part of the veterinarians of the Pacific slope in the first place, to have induced the association to meet so many thousands of miles further west than it had ever done before; and was a greater achievement on their

part to have arranged so perfectly for their transportation and entertainment in the magnificent manner in which it was done. What the association achieved in making that trans-continental trip is incalculable, but we believe it to be the greatest achievement in its history. It has no precedent. It began its achievement for good to the profession from the moment that the "AMERICAN VETERINARY SPECIAL" cars left Chicago, by impressing the public with the importance of the mission of their occupants in taking a line of Pullmans across the continent. Then think of the great good that was accomplished for the profession in the northwest as the train halted at the important cities of Spokane and Seattle, bearing to the chambers of commerce of each of those municipalities, who were their guests, nearly four score of the colleagues of the veterinarians of those cities; earnest men, filling the most important posts in the veterinary profession, both in the United States and Canada, journeying to the Pacific coast to discuss plans calculated to serve the live stock interests, and, consequently, the agricultural interests of both countries; to say nothing of the effect it had all along the line, even where it stopped but an hour or a fraction of an hour, picking up recruits in some instances, and receiving "God speed" from colleagues who were unable to join the party in others; but always leaving an increased respect for the profession with the townsmen of the veterinarians of each place.

And, finally reaching the host city, where they found their colleagues of the "Golden West" waiting to receive them in a marble palace which they had deemed fitting as the headquarters of so important an organization, the *real* work of the convention was begun, which it will not be necessary for us to review here as a full account of the proceedings appears in this number. But there is one phase of it that we feel we cannot pass over without a word of commendation; especially as it is a new feature of the work of the organization, the importance of which we referred to at the close of the Chicago meeting where it had its birth—the INTERNATIONAL COMMISSION ON THE CONTROL OF BOVINE TUBERCULOSIS. No one can read the report of that

commission, which will be found on page 101 of this issue of the REVIEW, with its appendices, without being impressed with several things in connection with it: First, with the immense amount of work that has been undertaken and accomplished; second, by the quality and character of the work; next, by the number of well-attended meetings held by the commission at different points over the United States and Canada, showing how interested the commission was in the work they had undertaken, and how earnestly they were pursuing it. And so the reader becomes more deeply interested in the report of this commission, and impressed with its thoroughness until his curiosity leads him to turn over a few pages to learn who the gentlemen are that compose a committee that has been capable of elucidating so many of the knotty problems that have long been stumbling blocks to progress; that have been able to give to the world in so concise a form a series of recommendations, not only on the control, but leading to the eradication of bovine tuberculosis.

Let us look for a moment on the personnel of the INTERNATIONAL COMMISSION ON THE CONTROL OF BOVINE TUBERCULOSIS in the order that we find the names signed to the report on page 110. The first gentleman, who modestly signs himself W. C. Edwards, is the Hon. William Cameron Edwards, of Russell County, Ontario, Canada, who had been a member of the House of Commons since 1887, and was called to the Senate in 1903. Senator Edwards has for many years been president of the Russell Agricultural Society, has taken a deep practical interest in agriculture, and is a very successful stock raiser, owning a large and valuable pure-bred herd of Shorthorns on his model farm at Rockland, Ontario.

J. J. Ferguson is also a Canadian by birth, although his headquarters are Chicago. Mr. Ferguson, though young in years, has had an unusual amount of experience. He was born near Smith's Falls, Lanark County, Ontario, Canada, but thirty-six years ago; graduated from the Ontario Agricultural College in 1894, being a silver medalist in his second year; was a successful Farmers' Institute lecturer for a number of years in the

employ of the Ontario government; afterwards being appointed Professor of Animal Husbandry in the University of Michigan. Since 1905, Mr. Ferguson has been in the employ of Messrs. Swift & Company, of Chicago, as head of the Animal Foods Branch of that corporation. He also acts as their special traveling representative in both the United States and Canada.

J. W. Flavelle, the third signature, is that of Joseph Wesley Flavelle, L.L.D. Dr. Flavelle was born at Petersborough, Ontario, Canada, in 1858; went into business in Toronto in 1887, and is now president and general manager of the William Davies Company, exporters and domestic bacon curers. He is president and director of several banks, chairman of the Board of Trustees of the Toronto General Hospital, and governor of the University of Toronto.

The next signature is W. D. Hoard. This gentleman, the Hon. W. D. Hoard, Ft. Atkinson, Wis., ex-Governor of Wisconsin, editor of *Hoard's Dairyman,* breeder of registered Guernsey cattle, a gentleman of wide practical experience, and possessed of a fund of scientific information on agricultural, sanitary and pathological questions that many professional men might hope to possess; in recognition of which, and of his early endorsement of the tuberculin test for the control and suppression of tuberculosis and his splendid efforts in aiding a solution of this world-wide problem through the medium of his paper and by heart to heart talks to the profession and laymen at veterinary gatherings, farmers' institutes, etc., he was made an honorary member of the American Veterinary Medical Association last year at Chicago.

The fifth signature, C. A. Hodgetts, is that of Charles Alfred Hodgetts, M.D., C.M., L.R.C.P., graduate in medicine and pharmacy, Secretary of the Provincial Board of Health for Ontario, member of the Royal Sanitary Institute, Fellow of the Royal Institute of Pharmacy, honorary vice-president of the Association of Public Vaccinators of Great Britain, Major of the Army Medical Corps, Canada, etc., etc. Dr. Hodgetts has published a number of medical treatises on smallpox and vac-

cination, and for a number of years has been Chief Health Officer of the Province of Ontario, and Deputy Registrar General. On the first of July last, he was appointed Chief Medical Adviser to the Committee on Conservation, for Canada.

Dr. J. N. Hurty is Secretary of the State Board of Health of Indiana. The doctor's home is in Indianapolis, where his earnest work along sanitary lines has for some time been thoroughly appreciated by his townsmen. In his connection with the International Commission, he represents the American State Boards of Health.

The gentlemen whose names follow on this commission need very little mention to REVIEW readers, being well known to nearly all of them.

John R. Mohler, V.M.D., is Chief of the Pathological Division of the Bureau of Animal Industry, at Washington, D. C. Dr. Mohler is an authority on veterinary pathology and has contributed largely to the literature on the subject in the English language. His official position, too, has acquainted him with conditions of farms and farm animals in all parts of the United States.

V. A. Moore. Professor Veranus Alva Moore, M.D., Director of the New York State Veterinary College at Cornell University, Ithaca, N. Y., certainly needs no introduction to our readers, as he has been identified with the veterinary profession for a great many years as bacteriologist, pathologist, teacher, and now director of one of the foremost veterinary schools in America. Dr. Moore has been chairman of the committee on diseases of the A. V. M. A. for several years and has had a wide experience with the tuberculosis problem both in New York state and while in Federal government laboratory work years ago.

Dr. M. P. Ravenel, is also too well known to necessitate going into minute detail in regard to him, in directing attention as to how eminently appropriate was his appointment on this commission. Dr. Ravenel was for a number of years Bacteriologist to the Pennsylvania State Live Stock Sanitary Board, and is the co-author, with the late Leonard Pearson, of the following

valuable contributions to veterinary literature: "The Immunization of Cattle Against Tuberculosis," "The Effect of Tuberculosis Vaccination Upon Cattle Already Affected With Tuberculosis," "The Disinfectant Value of Ammonium Persulphate," "Formaldehyde Gas as a Disinfectant" and "The Artificial Immunization of Cattle Against Tuberculosis," reported at the International Veterinary Congress at Buda Pesth.

Dr. E. C. Schroeder, Superintendent of the Experiment Station, Bureau of Animal Industry, United States Department of Agriculture, at Bethesda, Maryland, is another gentleman well known to the American veterinary profession, whose appointment on the commission is most fortunate. Dr. Schroeder is an investigator by nature and has opportunities afforded to few to follow his investigations systematically and thoroughly, which have resulted in an immense wealth of information from original research that could be had in no other way.

Mr. T. W. Tomlinson, of Denver, Colorado, is Secretary of the American National Livestock Association; a gentleman deeply interested in livestock organizations, whose interests he represents in the commission.

Frederick Torrance, B. A., D. V. S., Director of the Faculty of Comparative Medicine at the University of Manitoba, and Secretary and Registrar of the Manitoba Veterinary Association for the past ten years, has, ever since his graduation from the veterinary school of McGill University in 1882, conducted a large general practice in the Province of Manitoba, first at Brandon and later at Winnipeg, and enjoys the reputation of being one of the leading veterinarians of Canada.

Still following the order of the names as signed to the commission's report, we reach J. G. Rutherford, Chairman. John G. Rutherford, V.S., H.A.R.C.V.S. (and if he would permit us, C.M.G. from the King of England, and we are not certain there is not also a decoration from the Italian government in recognition of distinguished services), Veterinary Director-General and Live Stock Commissioner of the Dominion of Canada, is without doubt one of the most well known and most able men in the

veterinary profession in America. Dr. Rutherford is a man possessed of a strong personality, of an extraordinary fund of knowledge, and an amount of executive ability not possessed by the average man. It is that combination of qualities in one man, recognized by the Dominion of Canada in its Veterinary Director-General and Live Stock Commissioner, and which did not escape the notice of His Majesty, King George V., that has directed the work of the INTERNATIONAL COMMISSION ON THE CONTROL OF BOVINE TUBERCULOSIS; and, with the co-operation of his distinguished associates, placed the report in the splendid form in which Dr. Rutherford presented it to the American Veterinary Medical Association at San Francisco. How fortunate the veterinary profession of America is in having such a man as a member of it who is willing to give of his time and his knowledge in instances like this, needs no reminder from us.

And finally the last signature is reached. M. H. Reynolds, Secretary. As Professor of Veterinary Science in the Division of Veterinary Medicine at the University of Minnesota College of Agriculture and Experiment Station, scientist, painstaking investigator, prolific writer, practical worker, faithful recorder, honorable gentleman, where could such another be found to fill that important position? We are certain that the personnel of the commission offers a full explanation of the character and value of the report, and have no doubt but that the wisdom of the president will insure the re-appointment of the entire body.

INVITATIONS were extended to the A. V. M. A. for 1911 from Toledo, Ohio, and Toronto, Canada. Also for 1913 from New York City; and, while no action was taken on them, the indications at the close of the convention seemed to point toward Toronto in 1911, the middle-west (Toledo, if the invitation still holds good), in 1912, with New York in 1913 for the celebration of the fiftieth anniversary of the association, that being the city in which it was organized in June, 1863.

ORIGINAL ARTICLES.

SOME CONDITIONS WHICH AFFECT PHAGOCYTOSIS. *

By B. F. Kaupp, M.S., D.V.S., Pathologist, Colorado Agricultural College.

Ever since the fact was proven by Metchnikoff that certain cells of the body possess the power of taking up foreign substances, much study and research have been devoted to this line of work. The power that certain cells possess of taking up foreign inert matter consists merely in the change of surface tension, caused by the microscopic object. Pseudopodia are thrown out on either side and the object gradually surrounded by cytoplasm of the cell. This is a mere flowing around, as it were, of the cytoplasm.

Further research has long ago taught us that the condition is different with living microscopic objects, which gain entrance into the body. Germs are of this class, some resisting phagocytosis others being easily phagocyted.

Metchnikoff has classified the phagocytic cells into two groups. The microphages and the macrophages, or the small and the large phagocytes. While the endothelial cells of the peritoneal and other serous sacs may become phagocytic and even proliferate to aid in the warfare against the invading enemies, and while certain cells in the lungs aid in the destruction if micro-organisms as in a like manner the Kupfer cells in the liver and cells in various other parts of the body, yet the principal cells to wage warfare against intruders as a whole are the white blood cells.

One of the principal means of defense possessed by the animal body are the phagocytic leucocytes, which have the power of migrating or finding their way out of the capillaries and passing to any part where defense is needed, or where invading or-

* Presented at A. V. M. A. meeting, San Francisco, September, 1910

ganisms are present. It is true that certain physical and chemical reasons have been advanced to explain this action.

Through phagocytic activity, by aid of the enzymes given off by the leucocytes, as well as the enzymes contained in the cells themselves, and in the fluids bathing the part, the cells of dead tissue are little by little digested, chemically changed, and gradually carried away by osmosis and by the leucocytes.

The absorption of cat gut used by the surgeon is another example of phagocytic activity.

It has been pointed out by some investigators that the lymphocytes destroy or phagocyte those micro-organisms, as the tubercle bacilli, which contain much fatty or waxy material, and the polymorphonuclear leucocytes play the principal part in the destruction of those micro-organisms which contain little or no fatty material as the pus cocci (staphylococcus pyogenes aureus, staphylococcus pyogenes albus, streptococcus pyogenes).

It has been argued that wounds heal at high altitudes less rapidly than at sea level or low altitudes, and that the reason of this is that as the animal or individual ascends the polymorphonuclear leucocytes decrease, and the lymphocyte proportionately increase. It has been argued that the lymphocytes being the variety that phagocytes the tubercle bacilli, the patient may, by changing to a high altitude, increase the lymphocytes, and thus the bodily resistance.

The relative proportion of leucocytes as given by various authors is as follows (nothing is said as to the altitude at which the blood was procured and observations made):

Animal.	Polymorphs.	Lymphos.	Monos.	Eosins.	Mast.	Author.
Horse..	57	37	....	5	...	Bidanet.
Horse..	60–65	34–48	5.5	1.5	...	Cozette.
Horse..	67	22.5	5	5	...	Fischer.
Horse..	63.5	30	3.5	3	...	Meier.
Horse..	59	30	6	4	1	Moore, Etc.
Cow....	30.5	54.2	1.4	13.5	.5	Dimock & Thompson.
Dog....	68	19.4	6.3	6.1	...	Burnett.
Dog....	65.7	21	6.8	5.3	...	Busch.
Dog....	64.5	22.1	4.4	8.5	...	Dawson.
Dog....	72.5	10	17.8	3.3	...	Nicholas.

In this laboratory the author has been making some observations as to the relative proportion of the various leucocytes in the horse, ox and dog at different altitudes, beginning at sea level and ascending to 10,000 feet above. The smears have been furnished by different practitioners who are considered reliable, and all smears are supposed to be from healthy animals.

The observation numbers in this article are carried through consecutively for convenience of reference. The table shown on the following pages gives the results thus far obtained.

It will be noted that in some cases the proportion is somewhat different from the balance of the group. It will be remembered that while it is presumed the animals are free from disease, yet an occult condition as abscess, etc., may be present and thus make individual differential counts. It will be noted that in these ninety-three observations no great constant variance is noted, and that the average percentage is close to that of other observers. What part, if any, altitude may play in the fluids of the body yet remains to be worked out.

Phagocytes are attracted by certain chemical substances—a phenomenon noted in acute inflammation. When a chemical substance attracts the leucocytes, we call the condition positive chemotaxis. When a chemical substance repels the leucocytes, we call it negative chemotaxis. When a leucocyte comes in contact with a hard inert foreign substance, there is noted a protoplasmic prolongation from the cell cytoplasm on either side and finally surrounding the particle. In acute inflammation due to the invasion of pus producing micro-organisms, and until the abscess is opened or suppuration has ceased, there is noted a leucocytosis. This increase is largely due to the variety that phagocytes that particular micro-organism producing the disease.

It has been only a short time since the existence of defensive fluids in the body has been definitely proven. Much knowledge has been gained by carefully conducted experiments in this and other countries, and while much is known about the existence and production of these fluids which aid phagocytosis, yet

Name.	Location.	Altitude.	Animal.	Observation No.	Polymorphs.	Lymphos.	Monos.	Eosins.	Mast.	Remarks.
Rinker.....	Galveston.....	Sea Level.....	Horse	1	51	46	2.5	.75	1.5	Geld.
Rinker.....	Galveston.....	Sea Level.....	Horse	2	54	43	3	7	.5	Mare.
Rinker.....	Galveston.....	Sea Level.....	Horse	3	54	42	4	6	1	Mare.
Rinker.....	Galveston.....	Sea Level.....	Horse	4	64	32	2	8	1	Mare.
Rinker.....	Galveston.....	Sea Level.....	Horse	5	55	42	3	14	1	Pony.
Rinker.....	Galveston.....	Sea Level.....	Horse	6	54	41	5	12	1	Pony
Rinker.....	Galveston.....	Sea Level.....	Horse	7	53	44	3	6	1	Geld.
Rinker.....	Galveston.....	Sea Level.....	Horse	8	47	46	7	5	...	Mare.
Rinker.....	Galveston.....	Sea Level.....	Horse	9	55	42	3	16	3	Pony.
Average.....					54.1	42	3.5	8.5	1.1	
Rinker.....	Galveston.....	Sea Level.....	Cow	10	28	70	2	14	3	
Rinker.....	Galveston.....	Sea Level.....	Cow	11	27	71	2	4	2	
Rinker.....	Galveston.....	Sea Level.....	Cow	12	26	73	1	1	5	
Rinker.....	Galveston.....	Sea Level.....	Cow	13	34	61	5	7	2	
Rinker.....	Galveston.....	Sea Level.....	Cow	14	27	71	2	6	1	
Rinker.....	Galveston.....	Sea Level.....	Cow	15	20	78	2	11	...	
Average.....					27	70.6	2.9	7.1	2.3	
Rinker.....	Galveston.....	Sea Level.....	Dog	16	69	29	2	....	...	Terrier.
Rinker.....	Galveston.....	Sea Level.....	Dog	17	68	27	5	....	1	Terrier.
Rinker.....	Galveston.....	Sea Level.....	Dog	18	70	25	5	....	1	Terrier.
Rinker.....	Galveston.....	Sea Level.....	Dog	19	57	40	3	6	1	Cur.
Rinker.....	Galveston.....	Sea Level.....	Dog	20	77	18	5	1	2	St. Bern.
Average.....					68.2	27.8	4	1.4	1	

Name.	Location.	Altitude.	Animal.	Observation No.	Polymorphs.	Lymphos.	Monos.	Eosins.	Mast.	Remarks.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Horse	21	67	29	4	3	1	Geld. 9 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Horse	22	57	42	1	2	...	Geld. 8 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Horse	23	75	21	4	8	2	Mre. 14 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Horse	24	45	53	2	5	1	Geld. 8 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Horse	25	70	28	2	5	2	Geld.16 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Horse	26	55	42	3	6	...	Geld. 7 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Horse	27	70	26	4	8	1	Geld.16 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Horse	28	76	20	4	....	...	Geld.12 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Horse	29	61	37	2	4	1	Geld.12 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Horse	30	61	36	3	5	2	Geld.12 y.
Average.....					63.7	33.4	2.9	4.6	1	
Hall & Morrison.	Omaha.....	1,200 Feet.....	Cow	31	36	60	4	9	2	Dur. 5 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Cow	32	34	64	2	3	...	Dur. 5 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Cow	33	37	62	1	6	...	Dur. 5 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Cow	34	33	64	3	7	4	Dur. 6 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Cow	35	32	64	4	9	...	R&W 4 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Cow	36	45	53	2	3	...	Red 5 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Cow	37	43	55	2	7	1	Red 5 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Cow	38	34	65	1	6	2	Dur. 6 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Cow	39	39	60	1	9	2	Dur. 5 y.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Cow	40	42	54	4	13	1	Dur. 5 y.
Average.....					37.5	60.1	2.4	7.2	1.2	
Hall & Morrison.	Omaha.....	1,200 Feet.....	Dog	41	69	28	3	....	...	Terrier.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Dog	42	81	17	2	....	...	Terrier.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Dog	43	75	20	5	....	...	Pitt bull.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Dog	44	70	28	2	1	...	Bird dog.
Hall & Morrison.	Omaha.....	1,200 Feet.....	Dog	45	70	27	3	....	...	Coach.
Average.....					73	24	3	.2		

Kaupp	Ft. Collins	5,000 Feet	Horse	46	50	46	4	8	...	Geld. 8 y.
Kaupp	Ft. Collins	5,000 Feet	Horse	47	60	32	8	6	...	Geld. 8 y.
Kaupp	Ft. Collins	5,000 Feet	Horse	48	58	40	2	4	1	Blk. 14 y.
Kaupp	Ft. Collins	5,000 Feet	Horse	49	50	42	8	9	...	Bay 7 y.
Kaupp	Ft. Collins	5,000 Feet	Horse	50	52	43	5	9	2	Gray 8 y.
Kaupp	Ft. Collins	5,000 Feet	Horse	51	61	32	7	1	...	Bay 9 y.
Kaupp	Ft. Collins	5,000 Feet	Horse	52	63	32	5	7	...	Bay 14 y.
Kaupp	Ft. Collins	5,000 Feet	Horse	53	64	31	5	3	1	Bay 15 y.
Average					57.2	37.2	5.5	5.8	.5	
Kaupp	Ft. Collins	5,000 Feet	Cow	54	36	61	3	7	1	Red 5 y.
Kaupp	Ft. Collins	5,000 Feet	Cow	55	31	67	2	4	1	Red 6 y.
Kaupp	Ft. Collins	5,000 Feet	Cow	56	29	69	2	6	...	Red 2 y.
Kaupp	Ft. Collins	5,000 Feet	Cow	57	39	59	2	9	...	Red 8 y.
Kaupp	Ft. Collins	5,000 Feet	Cow	58	50	48	2	14	2	Red 12 y.
Kaupp	Ft. Collins	5,000 Feet	Cow	59	33	65	2	1	...	Red 3 y.
Kaupp	Ft. Collins	5,000 Feet	Cow	60	43	54	3	7	1	Red 6 y.
Kaupp	Ft. Collins	5,000 Feet	Cow	61	30	68	2	6	...	R&W 6 y.
Kaupp	Ft. Collins	5,000 Feet	Cow	62	53	43	5	6	...	Red 8 y.
Kaupp	Ft. Collins	5,000 Feet	Cow	63	40	57	3	8	...	Red 5 y.
Average					38.4	59.1	2.6	6.8	.5	
Kaupp	Ft. Collins	5,000 Feet	Dog	64	68	24	8	....	...	Terrier.
Kaupp	Ft. Collins	5,000 Feet	Dog	65	65	31	4	....	...	Cur.
Kaupp	Ft. Collins	5,000 Feet	Dog	66	74	16	10	....	...	Cur.
Kaupp	Ft. Collins	5,000 Feet	Dog	67	76	20	4	3	...	Cur.
Kaupp	Ft. Collins	5,000 Feet	Dog	68	61	33	6	....	2	Cur.
Average					68.8	24.8	6.4	.6	.4	
Brown	Raton	6,800 Feet	Horse	69	63	36	1	6	...	Mare.
Brown	Raton	6,800 Feet	Horse	70	60	37	3	3	...	Geld.
Average					61.5	36.5	2	4.5		

Name.	Location.	Altitude.	Animal.	Observation No.	Polymorphs.	Lymphos.	Monos.	Eosins.	Mast.	Remarks.
Brown.....	Raton.....	6,800 Feet.....	Cow	71	37	60	3	....	...	
Brown.....	Raton.....	6,800 Feet.....	Cow	72	34	61	5	1	...	
Average.....					35.5	60.5	4	.5		
Brown.....	Raton.....	6,800 Feet.....	Dog	73	65	30	5	3	...	
Brown.....	Raton.....	6,800 Feet.....	Dog	74	63	34	3	2	...	
Brown.....	Raton.....	6,800 Feet.....	Dog	75	52	44	4	2	1	
Brown.....	Raton.....	6,800 Feet.....	Dog	76	64	35	1	1	3	
Average.....					61	35.5	3.5	2	1	
Kaupp.....	Colo. Springs.....	7,000 Feet.....	Horse	77	60	36	4	2	...	
Balmer.....	Leadville.....	10,100 Feet.....	Horse	78	61	33	6	4	...	Geld. 8 y.
Balmer.....	Leadville.....	10,100 Feet.....	Horse	79	57	39	4	5	1	Geld.13 y.
Balmer.....	Leadville.....	10,100 Feet.....	Horse	80	65	31	4	7	...	Draft.
Balmer.....	Leadville.....	10,100 Feet.....	Horse	81	71	29	1	11	...	Geld. 8 y.
Balmer.....	Leadville.....	10,100 Feet.....	Horse	82	71	27	2	2	...	Geld.14 y.
Balmer.....	Leadville.....	10,100 Feet.....	Horse	83	57	39	4	5	2	Mare 4 y.
Balmer.....	Leadville.....	10,100 Feet.....	Horse	84	52	43	5	9	2	Mare 7 y
Balmer.....	Leadville.....	10,100 Feet.....	Horse	85	52	46	2	4	...	Mare 4 y.
Average.....					60.7	35.8	3.5	5.8	.6	
Balmer.....	Leadville.....	10,100 Feet.....	Cow	86	43	54	3	....	...	Hlst. 5 y.
Balmer.....	Leadville.....	10,100 Feet.....	Cow	87	44	53	3	2	...	Shrthrn.
Balmer.....	Leadville.....	10,100 Feet.....	Cow	88	42	53	3	2	1	R&W 6 y.
Balmer.....	Leadville.....	10,100 Feet.....	Cow	89	41	54	5	1	...	Hlst. 3 y.
Balmer.....	Leadville.....	10,100 Feet.....	Cow	90	37	62	3	2	...	Shrthrn.
Balmer.....	Leadville.....	10,100 Feet.....	Cow	91	57	41	2	3	2	R&W 7 y.
Balmer.....	Leadville.....	10,100 Feet.....	Cow	92	41	58	1	5	2	Roan 5 y.
Balmer.....	Leadville.....	10,100 Feet.....	Cow	93	50	48	2	1	...	R&W 4 y.
Average.....					44.3	52.8	2.7	2	.6	

there remains much to be discovered, and our knowledge after all is only in its infancy.

Our English confrères have the honor of demonstrating and naming the chemic substance which may exist in the fluids of the body and which sensitizes the germs to the leucocytes, so that they are enabled to destroy much larger numbers. This substance they gave the name of opsonin from the word's meaning—I prepare for food.

Opsonins are of a colloidal nature as proven by the filtration of serum through a sterile Chamberlain filter under high pressure. Yorke found that while the opsonin passed through at first, as soon as the pores became filled with the proteids of the serum, no more passed through. Bispan proved that opsonin was not dializable, and further that it was carried down with euglobin when the serum is half saturated with sulfate of ammonia.

Serum dried at 23° C. still contains the opsonin in an active state. Noguchi has shown that the opsonin thus preserved is still active after two years. Thus desiccated it resists a dry heat of 120° C., but will be destroyed if the serum containing it is heated to 60 to 65° C.

According to the results of experiments, opsonin is probably not formed in the blood. Allen's experiments go to indicate that at least one place of its formation is in the musculature.

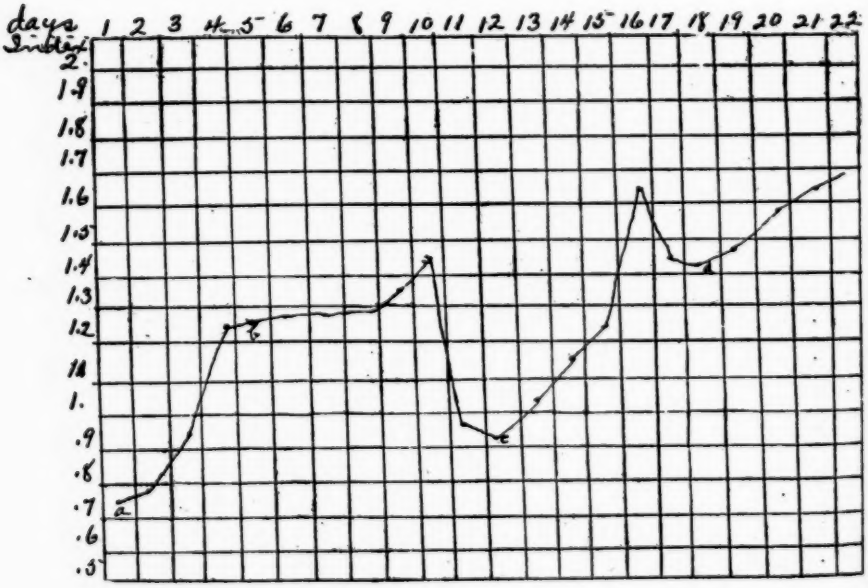
Experiments have shown that pus contains little or no opsonin. The opsonin content of serous exudates in pathological conditions, as in pericarditis, pleuritis, meningitis, peritonitis, etc., may greatly decrease. Such fluids should always be removed from the body.

Bacterial vaccines have been proven to so stimulate the increased production of opsonin that they are valuable in treating many diseases especially suppurating conditions as poll evil, fistula, quittor, wound infections, local septic infections, infected and suppurating nail pricks all are benefited by the introduction into the body of the vaccine made from the germs causing the disease. There are also many other conditions as strangles in horses that yield to the introduction of a vaccine made from the

specific germs. In this laboratory there has been prepared vaccines which have been used successfully in the hospital practice, and has been sent out to practitioners in large quantities. In order to arrive at a definite dosage of the vaccine used in conditions accompanied by pus formation, a series of opsonic determinations have been made, at the same time noting the clinical signs that go with the proper dosage as indicated by the opsonic index. The minimum dosage for satisfactory results have been aimed at.

The first case was a bay mare 9 years old. Fistula of the withers one month standing. Operated on June 4th and again on the 6th. Ligamentum nuchæ was necrosed, and diseased area was dissected out. Drainage was established. The following chart will give the reader an understanding as to the opsonic curve as influenced by the vaccine and also as to its lasting effect:

OBSERVATION NO. 94—CHART NO. 1.

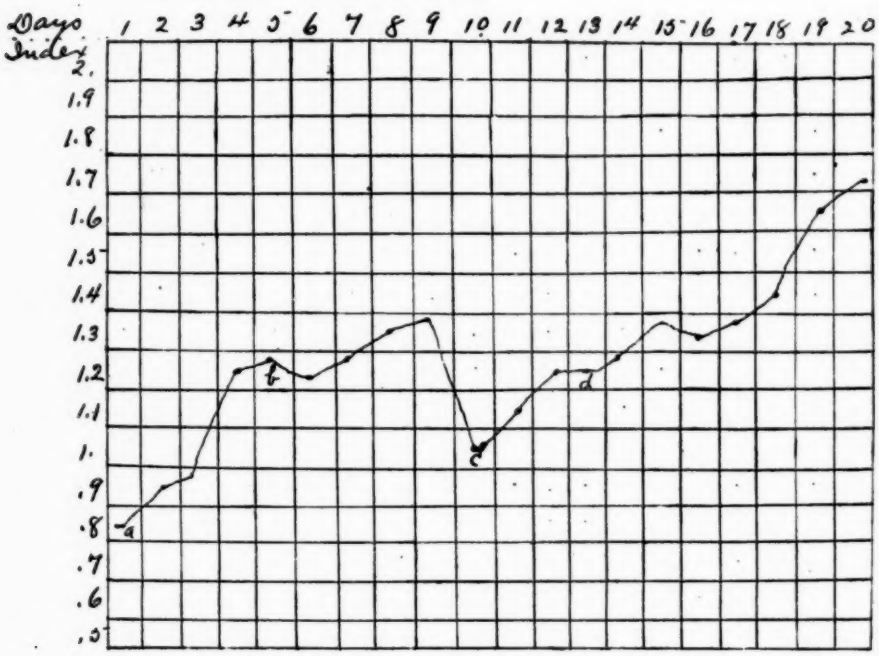


a—100,000,000 cocci given.
b—100,000,000 cocci given.
c—200,000,000 cocci given.
d—300,000,000 cocci given.

The vaccine was made from the staphylococcus pyogenes aureus, staphylococcus pyogenes albus and streptococcus pyogenes. It contained equal parts of each. After the first injection the swelling at the end of the fifth hour was three inches in diameter. The opsonic index was the same as when the injection was given, showing no negative phase at that time. On this quantity it will be noted that the index gradually increased for three days when the index the following day was found to be practically the same, and another injection was given. Following this second injection an opsonic determination was made at the end of the seventh hour, but no negative phase was observed; on the other hand it was practically stationary. The swelling at the point of injection was only one and one-half inches in diameter, which receded as the former swelling in about seventy-two hours. This small swelling indicated that the injection was not large enough as a second vaccination. The index will be noted to have remained practically stationary for the following three days, then a slight upward turn. This quantity of vaccine, however, did not allow of the index taking a downward curve till after the fifth day. Another day was allowed to pass to see just what would take place and a further fall was noted. At this time the dosage was doubled. The swelling at the end of the seventh hour was about two and a half inches in diameter, which subsided in about seventy-two hours. The pus had been gradually becoming less in quantity. The pus thick and creamy and the wound gradually becoming dry. It will be noted as indicated by the chart that the index took a brisk upward turn as a result of this increased dosage. This continued increase in the production of opsonin as indicated by the index lasted for four days. A drop then took place and another injection of vaccine was given and another rise followed.

The second case was a bay gelding 9 years old. Fistula on the right side. The abscess was opened and good drainage established. As noted by the chart the opsonic index was .8 One hundred million germs in the form of a vaccine was injected subcutaneously. Seven hours after the vaccination the swelling at

OBSERVATION NO. 95—CHART NO. 2.



a—100,000,000 cocci given.
b—100,000,000 cocci given.
c—200,000,000 cocci given.
d—300,000,000 cocci given.

the point of injection was about two inches in diameter. This swelling subsided in less than 72 hours. At this time (7 hours) there was a slight negative phase. At the end of twenty-four hours the index had risen one-tenth of one point. The index continued to rise until the end of the fourth day. The pus became a trifle less in quantity, some thicker, but not so marked as in case No. 1. Another injection was given and an increased rise was the result. At the end of four days there was a sharp drop at which time another injection was made. This injection was followed by a slight negative phase, which was markedly overcome by the following day. The swelling at the point of injection was not so large as in the one previous, and it was decided to give a larger dose the next time. The swelling at the withers had gradually subsided as well as the pus less copious.

and the wound was becoming dry. Following a double dose, the index took another upward turn, and at the end of the third day a still greater dosage caused a continued increase of the production of the opsonin.

The conclusion of a careful study of these charts tell us that the minimum dosage of this vaccine to obtain the best results, should be at least 100,000,000 germs, and that this dosage must be gradually increased. That the swelling at the point of injection should be from two to three inches in diameter which should subside in from forty-eight to seventy-two hours. That the pus should become less in quantity and thick and creamy. While some good results have been obtained by no surgical interference, yet it is better to dissect out all necrotic tissue and establish good drainage. Where the wound is large and around the cartilage of prolongation and free motion of the scapula upon the wound, and the animal runs in a large field, little results can be looked for or the results will be very slow. Likewise a large pus pocket undrained will not yield till good drainage is established. We have also noted that some cases will respond much more satisfactorily than others but all are benefited if the right germs are used in the preparation of the vaccine. The germs must be virulent.

It is observed by those who do blood study on the human patient that certain anæsthetics cause a destruction of erythrocytes, and a lowering of the hemaglobin of the blood. It is noted that those fat dissolving agents as ether and chloroform, particularly have this effect and in experiments conducted in this laboratory ether has proven the most destructful to this part of the blood.

The difference in clinical results may be explained by the variation in technique of the administration, in volume of anæsthetic used and the duration of anæsthesia.

With ether anæsthesia the hemaglobin content gradually falls as do the number of erythrocytes. The restoration of the hemaglobin is less rapid than that of the erythrocytes. Therefore ether is not advisable when the hemaglobin content is low. A leuco-

cytosis may follow etherization. If there is a long post leucocytosis (longer than twenty-four hours), it indicates, in surgical cases, poor drainage, unopened pus pockets or secondary infection.

Anæsthesia by chloroform may likewise be followed by leucocytosis. The degree and length of this leucocytosis depends upon the rate of elimination of the chloroform from the body. It also reduces coagulability of the blood. Thus there is a greater danger of oozing in cases of surgical operations. The changing of a packing in a wound may be followed by a temporary leucocytosis.

It was determined to conduct some experiments to see what effect if any anæsthesia had on the power of leucocytosis, and to determine if the effect was upon the opsonin, or upon the physical power of the cytoplasm. All the literature at hand was searched for like experiments and one series was found. This series consisted of three experiments conducted by Dr. L. Reynolds, an Englishman. The experiments were conducted upon two dogs and one guinea pig. Anæsthesia was produced by morphine. In each case the power of phagocytosis of the blood was reduced 50 per cent. or more. No effort was apparently made to determine just what element the anæsthetic had its effect upon.

The table on the following page shows the quantitative as well as the relative cellular blood count.

These observations indicate that the anæsthetics have the effect of temporarily reducing the phagocytic power of the blood. That as a rule this condition lasts less than twenty-four hours.

The next series of experiments were conducted in an effort to determine, if possible, whether the effect was upon the opsonin or upon the physical properties of the cytoplasm of the cell.

In this study 1a = leucocytes before anæsthesia.
1b = plasma before anæsthesia.
2a = leucocytes after the animal had been under the anæsthetic one hour.
2b = plasma after the animal had been under the anæsthetic one hour.
3a = streptococcus pyogenes emulsion.

Animal.	Anæsthetic.	Time.	Erythro-cytes.	Leuco-cytes.	Polymorpho-nuclears.	Lympho-cytes.	Mono-nuclears.	Eosins.	Mast.	Remarks.
			OBSERVATION No. 96.							
Dog.....	H. M. C.....	Before anæsthesia	6,100,000	16,000	74	16	10	..	..	Blood secured while animal under anæsthesia.
Dog.....	H. M. C.....	1 hr. under anæsthesia.	6,300,000	17,000	79	16	5.	4.5	..	
Dog.....	H. M. C.....	24 hrs. later.....	7,120,000	17,000	81	16	3.	8.	..	
Phagocytosis before anæsthesia, 7.6 cocci per polymorph.										
Phagocytosis under anæsthesia, 1 hour, 3.4 cocci per polymorph.										
Phagocytosis 24 hours after anæsthesia, 7.5 cocci per polymorph.										
			OBSERVATION No. 97.							
Dog.....	H. M. C.....	Before anæsthesia	3,800,000	7,000	76	20	4.	..	..	" "
Dog.....	H. M. C.....	1 hr. under anæsthesia.	4,200,000	11,000	83	15	2.	..	..	
Dog.....	H. M. C.....	24 hrs. later.....	5,000,000	12,000	80	14	6.	2.	1.	
Phagocytosis before anæsthesia, 7. cocci per polymorph										
Phagocytosis 1 hour under anæsthesia, 3.2 cocci per polymorph.										
Phagocytosis 24 hours after anæsthesia, 6. cocci per polymorph.										
			OBSERVATION No. 98.							
Dog.....	Ether.....	Before anæsthesia	5,520,000	18,000	59	33	8.	1.	..	
Dog.....	Ether.....	1 hr. under anæsthesia.	3,800,000	21,000	61	33	6.	..	..	" "
Dog.....	Ether.....	24 hrs. later.....	4,680,000	22,000	65	27	8.	1.	..	
Phagocytosis before anæsthesia, 4. cocci per polymorph.										
Phagocytosis 1 hour under anæsthesia, 2.5 cocci per polymorph.										
Phagocytosis 24 hours after anæsthesia, 3.5 cocci per polymorph.										
			OBSERVATION No. 99.							
Dog.....	Ether.....	Before anæsthesia.....	4,900,000	12,000	67	31	2.	2.	..	
Dog.....	Ether.....	1 hr. under anæsthesia.	3,800,000	10,000	64	30	6.	..	..	" "
Dog.....	Ether.....	24 hrs. later.....	4,500,000	11,000	63	33	4.	2.	..	
Phagocytosis before anæsthesia, 4.3 cocci per polymorph.										
Phagocytosis 1 hour under anæsthesia, 3. cocci per polymorph.										
Phagocytosis 24 hours later, 3.5 cocci per polymorph.										
			OBSERVATION No. 100.							
Dog.....	Chloroform.....	Before anæsthesia	4,720,000	10,000	75	24	1.	3.	1.	
Dog.....	Chloroform.....	1 hr. under anæsthesia.	3,700,000	9,000	76	22	2.	2.	..	" "
Dog.....	Chloroform.....	24 hrs. later.....	4,680,000	12,000	71	26	3.	2.	2.	
Phagocytosis before anæsthesia, 4.7 cocci per polymorph.										
Phagocytosis 1 hour under anæsthesia, 2. cocci per polymorph.										
Phagocytosis 24 hours later, 3.6 cocci per polymorph.										
			OBSERVATION No. 101.							
Dog.....	Chloroform.....	Before anæsthesia.....	5,400,000	12,000	67	32	1.	..	3.	" "
Dog.....	Chloroform.....	1 hr. under anæsthesia.	3,450,000	14,000	68	30	2.	3.	..	
Dog.....	Chloroform.....	24 hrs. later.....	5,300,000	13,000	65	33	2.	3.	..	
Phagocytosis before anæsthesia, 3. cocci per polymorph.										
Phagocytosis 1 hour under anæsthesia, 1.8 cocci per polymorph.										
Phagocytosis 24 hours later, 2.9 cocci per polymorph.										

Blood was secured, centrifuged, and the plasma placed in capillary tubes. The leucocytes washed and likewise kept. The dog was then chloroformed one hour, and while the animal was still anæsthetized, blood secured and likewise handled. After the usual technique the following problems were run:

Observation No. 102.

1—1a + 2b + 3a = 6 cocci per cell.
2—1a + 1b + 3a = 9 cocci per cell.
3—2a + 1b + 3a = 7.7 cocci per cell.

Observation No. 103.

1—1a + 2b + 3a = 2.5 cocci per cell.
2—1a + 1b + 3a = 4.2 cocci per cell.
3—2a + 1b + 3a = 4.2 cocci per cell.

Observation No. 104.

1—1a + 2b + 3a = 2.7 cocci per cell.
2—1a + 1b + 3a = 3.5 cocci per cell.
3—2a + 1b + 3a = 3.3 cocci per cell.

In these three problems we note that the leucocytes before anæsthesia plus the plasma after the animal was under the anæsthetic one hour showed a lower number of cocci per cell than did the leucocytes after the animal had been under the anæsthetic one hour plus the plasma before anæsthesia. As a check on this result we have for comparison the leucocytes plus the plasma before anæsthesia which show a similar result, indicating that chloroform exerts its greatest influence upon the opsonin, or its production.

A detailed description of the technique in this work has been purposely omitted, as the length of the article would not permit it, and every laboratory worker is perfectly familiar with it.

NINETY-FOUR California veterinarians were in attendance at the San Francisco meeting of the A. V. M. A., and three medical men of that state honored the association by their presence.

BOVINE TUBERCULOSIS LEGISLATION.*

By M. H. Reynolds, University of Minnesota and State Live Stock Sanitary Board.

There are some phases of the bovine tuberculosis problem which your International Commission did not think best to consider and report upon although conceding their importance. One of these was the question of state live stock sanitary organization and legislation in the United States.

It is my purpose to present this phase of the problem and call the attention of this Association to certain difficulties and urgent needs and make some recommendations.

A study of the law, organization and work now being done by the several states of the Union reveals some startling information. Twenty-five states impose tuberculin test restrictions on importation; sixteen states have some provision for compensation; fourteen states provide for testing by the state, *i. e.,* the state *may* test; seventeen states of the Union have provision for compulsory reporting; only five states have any provision for carcass salvage; but two states have legal provisions for pasteurization of creamery skimmed milk, although this is a most serious source of dissemination; one has state meat inspection service; two, possibly three, are attempting to control the distribution and use of tuberculin; seventeen states have no special provisions referring to tuberculosis, and twenty-one states of the Union are not even pretending to do anything with the great problem of bovine tuberculosis. It should be understood that these figures are probably not exactly correct, but are as nearly correct as we are able to get from state laws available and are sufficiently accurate for our present purpose. In many states laws are so

* Presented in connection with report of committee on diseases. A. V. M. A., September, 1910.

worded that it is exceedingly difficult to estimate what they do really provide.

Let us consider some of these statements more carefully.

Twenty-five states out of a total of about fifty have legal provision for tuberculin test of dairy cattle and breeding cattle imported, but very few of these are making any attempt to control tuberculosis among their own cattle. Seventeen states ignore tuberculosis in their state laws. Only seventeen states, about one-third, have any form of compulsory reporting. Five states provide for carcass salvage with sixteen states providing compensation for owners. Only two states have provision, so far as I am able to learn, for pasteurization of their creamery skimmed milk. Sixteen states are providing for compensation to owners with but one state having any provision for meat inspection service. About two states, possibly three, out of a total of about fifty, are attempting to control the sale and distribution of tuberculin although it is usually conceded among students of the bovine tuberculosis problem that this is of fundamental importance.

These figures and statements are startling to those who have been studying the situation—possibly not quite so significant to those who have not been deeply interested. One state of the Union and one of the oldest states, has made no change in its live stock sanitary law since tuberculin as a diagnostic, was discovered. My listing in most of these classifications has been very generous and the statements are probably conservative rather than extravagant. Note that in this showing our states are long on provisions like importation regulations which cost nothing and as hitherto managed accomplish little, and very short on provisions like those relating to sale on test of pure-bred cattle, pasteurization of creamery skim milk, control of tuberculin, and state meat inspection—which might occasion expense or antagonism.

Think of it, twenty-one states doing absolutely nothing and making no pretense, with very many other states practically ignoring the state legislation which they have.

Is it not painfully evident that our work in this country as in other countries, has been scattered and irregular, small and ineffective? Is it not painfully evident that it has been unsystematic; that we have not been getting anywhere except as to progress in public education; not getting anywhere so far as control work is concerned, and that little permanent work has been accomplished in the way of eradication? I believe that the condition of public interest and education is such that we are ready for something definite and practical. Two things seem to be absolutely essential and hitherto lacking:

First, efficient organization, and, second, a practical policy.

Organization.

It must be granted that the present situation in the United States is unsatisfactory. A few states have good live stock sanitary organization, but these few are widely scattered. Many states have weak and inefficient political organizations that amount to little so far as sanitory work is concerned. Many states have practically nothing in the way of a sanitary machine. and are doing practically nothing. I can put my finger on the map of the United States at plenty of places where the state live stock sanitary organization as an agent for hog cholera control work or tuberculosis control work is simply a joke. Yet these same states have heavy interests in cattle and hogs and plenty of tuberculosis.

It is evident that thorough and well-planned organization is necessary for effective work with such a difficult and complicated, such an immense problem as tuberculosis.

It does not require great foresight to predict safely that there is rough sailing ahead for any board that undertakes to do real work with tuberculosis. Opposition must be expected from politicians, from breeders, and even from powerful breeders' organizations. To meet this opposition, the state live stock sanitary organization must have a firm and permanent foundation and the strongest possible backing. It must have permancy or it can not

accomplish results. There should be close and friendly relation with agricultural colleges and experiment stations, with breeders' associations and state veterinary associations. Such an organization must be able to formulate very long-time plans with a reasonable probability of being able to carry them out. Let me suggest a proposition for your careful consideration. It is this:

The most perfect plan that could possibly be devised for tuberculosis control work is necessarily foredoomed to failure if it does not provide for an efficient organization of the body that assumes the task. Of what possible use could or can an ideal plan be without an efficient sanitary machine to carry it out? These are certain fundamentals of legislation which are of universal application.

Fundamentals of Legislation.

Uniformity of law and regulation.—That there is urgent need of uniformity among several states attempting to do police work with bovine tuberculosis as well as between adjoining nations, is self-evident. In the United States at least, where the writer is better acquainted, our breeders and shippers are constantly being put to serious embarrassment by reason of the present confusion of state laws and regulations on this question. The writer recently had a letter from a prominent Iowa breeder who was trying to ship a registered bull to another state. He certainly had an annoying time of it, although trying in the best of faith to comply with requirements. Uniformity of laws and regulations between neighboring states would contribute very greatly to efficiency of sanitary service. Let us aim toward uniformity.

There are certain fundamentals that must be provided for in laws or regulations. There are certain principles that are equally applicable in California and Minnesota.

It is self-evident that there must be a well-organized executive body.

This machine for doing the work must be authoritative; it must have assurance of permanance. It must have ample backing

and public confidence and must represent fairly all interests, especially live stock and veterinary.

The plain purpose of this machine and its responsibility is to protect public health from diseases of animals and to protect animal husbandry from losses through infectious diseases of domestic animals. This central executive or controlling body should have for its chief function, police sanitary control work. It should not strive to be an experiment station. The government and the several states have an organization especially provided for experimental work. If the experiment stations are inefficient and are not doing the work which they ought to do then they should re-organize and be strengthened. There should not be an experiment station and a live stock sanitary board in the same state trying to do the same work at the same time. The scope of authority for the executive body must be ample. It should have almost unlimited authority so far as proper sanitary control work is concerned and at the same time be so organized that it can be safely trusted for judgment and intelligent administration.

Legislation With Especial Reference to Tuberculosis.

I will group fundamentals under: Location of Tuberculosis; Dealing with Tubercular Herds; Avoidance of Dissemination, and Financial Considerations.

Location.

It is self-evident that in any legislation pretending to deal with the problem of bovine tuberculosis, means must be provided for locating diseased animals and authority be given to the executive body to deal properly with it when located. First of all, there must be some accurate diagnostic officially recognized; an accurate diagnostic is absolutely necessary to any effective work. An executive body representing the state should be able to test for owners under proper restrictions.

There should be provided some compulsory notification, but there may be reasonable question as to whom this compulsion should rest upon. I believe, and I have had some years of experience to justify the belief, that a good law should provide that anybody who knows of or has reason to suspect the existence of infectious disease is under moral and should be under legal obligation to make proper report.

Then we should have the information available from killing floors. This means that proper provision should be made for tracing back to the herds from which the diseased animals come, and the state authorities must be able to act upon this information.

Under location we have also official tuberculin testing. Tuberculosis found in the course of such testing—tuberculosis of even a few animals must place the entire herd under official supervision. There is no other tenable ground.

Tuberculin supplies us with the accurate diagnostic which has been already referred to as fundamentally necessary. Within recent years it has become evident that the state must have supervision over the distribution and use of tuberculin. There should be made provision for reliable reports of sales, and tuberculin test work that has any official bearing should be accompanied by an affidavit from the owner specifying clearly concerning the last previous test or injection.

Careful provision must be made for dealing with the tubercular herd.

Dealing with the Tubercular Herd.

In this work we must have public confidence, and owners in general must realize that they are having fair treatment. This is not only wise as a matter of policy, but it is right. The owner should have full and generous protection, whether tuberculosis is found on the killing floor or whether tuberculosis is not so found. Conditions are rare under which the owner should not be given an option between quarantine and slaughter.

I believe firmly that compensation is wise and helpful, almost necessary in many states for rapid progress *in the early history* of this work, and on the other hand I am equally certain that this should be regarded as a temporary procedure and provision should be made for doing away with compensation as soon as the state is ready for permanent work on a large scale. The writer is thoroughly convinced, after some years of experience, that compensation is not wise for any state when that state attempts real control or actual eradication in earnest.

Carcass salvage is not only practical and wise but abundantly justified by experience, and states which are making no attempt at carcass salvage are doing extravagant work. I say this realizing that there are quite a number of states not provided with abattoirs having Federal inspection, and that Federal laws prohibit interstate shipment of tubercular cattle. Killing many tubercular cattle without carcass salvage is extravagant work.

The disposition of tubercular cattle needs to be varied according to several conditions. The executive body should have ample authority to deal with a diseased herd according to extent of infection, number and value of animals and accessibility to abattoirs. A herd of common grade cattle of relatively low value can not usually be dealt with according to exactly the same procedure as the high bred herd of valuable animals. Two herds of the same class, one containing a very low percentage of tuberculosis and the other a very high percentage of tuberculosis can not always be dealt with wisely by the same procedure.

A final suggestion under this head is that non-reactors in a tubercular herd must themselves be considered suspicious.

Avoidance of Dissemination.

Avoidance of dissemination is perhaps the great fundamental.

There is much food for thought in the suggestion often made by Dr. V. A. Moore, namely, that eradication would be accomplished naturally with the death of the present generation of cattle if further dissemination were not permitted. It is self-

evident that all contact between healthy and diseased animals must be avoided. Even contact in open air has in recent years been repeatedly shown an important consideration, and unsafe.

Creamery skimmed milk furnishes in many states one of the most serious sources of disseminaton. Fifty farmers take their milk to a certain creamery. The great majority of them may have sound herds. A few have tubercular herds. The skimmed milk is all mixed in large tanks. Each owner takes home his share of mixed milk and some tuberculosis for his calves and hogs. The remedy is simple and obvious; state legislation providing for efficient pasteurization. In this legislation specific provision should be made for time and temperature of exposure or pasteurization becomes a farce.

The sale and exchange of breeding cattle has probably done more to take tuberculosis in previously free areas at a distance than any other agency. Here we have the obvious suggestion for importation regulation, and legislation providing for sale or exchange with certificate of tuberculin test for intra-state movement. We have a comparatively new law in Minnesota providing for such tuberculin test of pure bred cattle sold and we have been most agreeably surprised by the lack of opposition and lack of friction as it has gone into effect.

It is an accepted principle that all importation of dairy and breeding cattle into states which are attempting to do anything with tuberculosis at home, should be subject to satisfactory certificate of tuberculin test. States that do not have such provision must necessarily become dumping ground for neighboring states which do have importation restrictions. We have some of the richest stock states in the Union becoming conspicuous as dumping grounds for tubercular cattle. What a slaughter is looming up there for the future!

It has become painfully apparent in recent years that the only satisfactory certificate of tuberculin test for importation is one signed by a Federal or responsible state official, or at the very least, by an accredited private practitioner and countersigned by a state official representing the executive body.

Finally under the head of avoidance of dissemination and particularly with reference to importation, there must be cordial state and Federal co-operation at terminal points, and provision should be made for this in state legislation. I must call attention to financial considerations.

Financial Consideration.

Any really effective tuberculosis control work must have generous financial support and it is decidedly preferable that this should be in the form of a fixed annual appropriation instead of special appropriations from time to time as the legislature meets. The executive sanitary body must be able to work on plans extending far into the future. It is important that the executive body may know as far as possible in advance what it can depend upon in the way of funds. It can not get results when generously provided during one bi-ennial period and badly cramped in the next. No great work can be accomplished on such a basis.

The justification for generous funds lies in the fact that tuberculosis among domestic animals is conspicuously a public welfare problem. We must not lose sight of the fact that the prosperity of a people must ordinarily depend upon the prosperity of their agriculture and it is equally clear that in America prosperous agriculture depends upon a prosperous animals husbandry. All lines of business, all commercial enterprises are financially concerned in tuberculosis control work.

Funds provided for this work must be used exclusively for their legitimate purpose and expended wisely and economically. While many legislatures seem willing to stand for unreasonable extravagance in certain lines, they will not stand for extravagance in any sanitary control work, either human or veterinary. The legitimate use of public funds provided for this work is first and always sanitary police control work.

It goes without saying that there must be a proper system of accounting and reporting on the part of the executive body responsible for the work.

Recommendations.

In Canada veterinary police work is centralized in the Dominion government and under one head which makes it a comparatively easy matter to put any policy into prompt operation. Canada can easily make immediate use of the recommendations of the International Commission on Bovine Tuberculosis. I am not at all clear as to just how much use many states of the Union, with their present organization and legislation, can make of these same recommendations.

It is scarcely worth while to spend the time of this Association discussing the question as to whether intra-state tuberculosis work should be done in the United States directly by the Federal government, or whether it is wiser and safer policy for this work to remain where it now is, each state being sovereign so far as its sanitary police work within the state is concerned. I say it is scarcely worth while for us to discuss this question at present because it is extremely probable that a great many states will not voluntarily surrender to the Federal government their sanitary police rights within any reasonable term of years. Whether it is wiser policy or not is not under discussion. Direct centralized Federal control might easily be infinitely more efficient, but the conspicuous fact is that with few exceptions individual states are going to continue doing their own intra-state work for many years to come.

With the unsatisfactory condition of our state organizations and our state legislation as already presented, it seems that Canada may very easily outstrip us in the near future so far as dealing with bovine tuberculosis is concerned. Our situation in the United States may be good relatively, comparing with some other nations; but actually it is very bad so far as future effective work is concerned. The sooner we admit this to ourselves and get busy trying to improve it, the farther along we will be twenty-five years from now. With our progress made and experience gained we might easily point the way for other nations to follow. But after all the important thing is not that Canada

may make greater progress in the future than the United States, or that the United States may beat Canada or any other country, but that the individual states of the Union should, as rapidly as possible, get on a good basis for effective work in the control of tuberculosis among our domestic animals. With present organization and present legislation in very many states where live stock interests are heavy, effective work simply is impossible.

The United States Associaton of Live Stock Sanitary Boards has taken up this problem and has a committee already working upon it.

In closing we wish to recommend that this Association appoint a committee of three to confer with the Committee already appointed by the United States Association of Live Stock Sanitary Boards with a view to studying the problem of better state organization for control work.

Commenting upon this we may say that there can be no reasonable anticipation of sudden developments. Improvement must be gradual—possibly slow—but the present situation is extremely unpromising and even though it take us five years or twenty-five years to make any appreciable progress, it is a work that ought to be done. It should be begun soon as possible and then be pushed persistently and patiently.

THE dainty, artistic beauty of the cover of the A. V. M. A. program, with sprigs of California poppy, did not " just happen," but cost Dr. Archibald and some of his colleagues a good many hours of strenuous thinking; some of his associates predicting that he would get some gray hair over it before he would get it to finally satisfy him. No wonder the universal exclamation, " What a handsome thing that is! " unconsciously escaped the beholder when the eye fell upon it for the first time. The effect of the immaculate, white cover, the beautiful coloring of the poppies and the deep rich green of the lettering was very striking, and repaid the committee for the time and thought they gave to it.

SOME METHODS EMPLOYED IN NORTHERN EUROPE TO CONTROL BOVINE TUBERCULOSIS.*

By Veranus A. Moore

In the summer of 1909, under the auspices of the New York State Department of Agriculture, I had an opportunity to study somewhat carefully the methods employed for the control of bovine tuberculosis in Denmark, England, Germany and Holland. The difficulties attending the control of this disease in Europe are not essentially different from those in this country. The methods or systems of control which have been adopted there differ, however, from those generally applied or considered with favor in America. The reason for the difference lies primarily in the views or beliefs of the people—both officials and laymen—relative to the application of recorded facts pertaining to the disease. It is also apparent that the Europeans recognize the situation in its entirety more fully than Americans, and consequently they are willing to submit to the most feasible methods which give constantly increasing security and which tend eventually to eradicate the disease.

The control of tuberculosis of cattle in Europe is looked upon more philosophically than it is in this country. It is recognized as a great scourge which became widespread before the significance of its existence was recognized. Because tuberculosis existed in a large percentage of herds, the question of control seems to have centered about some method by which sound herds could be built up from diseased ones with the least loss to the owners. This feeling has not permitted radical measures, nor has it carried the people away from the actual conditions as they exist. This has permitted the application of methods which their

* In connection with report of Committee on Diseases A. V. M. A., San Francisco, Sept., 1910.

authors believe will eventually eradicate the disease. These methods are characterized by their constantly increasing protection to the people who—contrary to American citizens—are willing to accept a steady improvement until the ideal is reached rather than to attempt, with great sacrifice, the impossible step from present conditions to the ideal at once.

Before discussing the methods that are being tried it is essential that the difference in the attitude of the people in Europe and America toward the tuberculous cow should be understood. In all of the methods the cases of open tuberculosis are considered dangerous and they are to be eliminated. On the other hand, clinically sound cattle which react to tuberculin are not in Europe considered dangerous to any great extent at least, and the owners of such cattle sell the milk in the open market, while in this country such an act would not be permitted. This makes the Bang and Ostertag methods possible in the old world, and the Manchester procedure does not take occult cases into account. Again, owners of tuberculin reacting cattle are allowed to dispose of them as they please, thereby being able to eliminate infected animals to the greatest possible advantage and to establish sound herds in the minimum time. The apparent reason for this is that a large percentage of the herds already contain one or more infected animals. The object to be attained is the establishment of sound individual herds.

The methods that are employed to eliminate bovine tuberculosis in the countries mentioned may be divided into two classes. The first, which may be called the direct method, consists in the government giving direct assistance to cattle owners to aid them in their efforts to eradicate tuberculosis from their herds. The second, which may be called the indirect method, consists in certain local regulations to protect the people of a community against the danger of tuberculous infection from milk, and thus indirectly interfering with the natural dissemination of the disease among cattle. The laws and regulations pertaining to the indirect method often differ one from another, and in many localities they do not exist at all. Their purpose is to protect

the public health, but indirectly, as already stated, they are believed to be of varying value in lessening the amount of tuberculosis in the dairy herds. In none of the countries mentioned does the law or the regulations now in force presume to control the disease in all of the herds in the country. The governments are concerned with the direct method only, and to prevent the importation of the disease.

DENMARK.—In Denmark the method known as the "Bang method," in honor of Professor Bang who introduced it in 1894, is the direct and official procedure followed. It consists in the government testing with tuberculin all the cattle in a herd, when requested to do so by the owner, who agrees to comply with the government requirements. These consist in separating the reacting animals from the non-reacting ones, either by placing them in different stables or by putting up a partition in the same stable. When outside they are kept in separate paddocks or fields. The advanced cases and all cows with udder tuberculosis are eliminated. The non-reacting animals are tested every six months or a year, and if any of them give a reaction they are placed with the reactors. The calves of the infected cows are removed promptly after birth from their dams and fed the milk of the sound nurse cows or the pasteurized milk of the infected ones. As soon as the sound herd is of sufficient size, the reacting animals are eliminated and their stable thoroughly disinfected. As a precaution all of the separated milk at creameries is pasteurized at 80° C. before it is returned to the farm.

Since 1894 about 10 per cent. of the herds in Denmark have been brought under this method with very gratifying results. The other 90 per cent. remain without control except by the indirect method.

The success of the Bang method in the herds where it has been tried have been made possible because of two important conditions, viz.:

(1) The farmer is allowed to sell the milk of the reacting cows with that of the healthy ones, except where the local authorities object or where infants' or children's milk is produced.

(2) The owners are allowed to sell the reacting animals to whom and where they please. This freedom of action enables cattle owners to eliminate undesirable animals and to keep for breeding purposes the better ones.

As the milk is used and as the cattle can be sold, the method is carried out with little loss to the owner and with small cost to the state.

On the question of eliminating tuberculosis, Professor Bang states that by removing all of the udder and other clinical cases, the danger from the milk is minimized and, therefore, it is much safer than it was before the herd was tested. The sale of reacting cattle is not prohibited, because it would prevent farmers from eliminating the infected individuals from their herds. So long as a large percentage of the herds are infected, the Danish government sees no objection to this practice. In a country where tuberculosis is prevalent, Professor Bang himself stated that " It is no worse to sell a cow that reacts to tuberculin than it is to sell one that has not been tested." He would not approve of this practice if most of the herds were free or if the government assumed control of *all* herds and compensated the farmers for the reacting animals.

The Danish method requires from three to ten years to build up a sound herd from an infected one. The further and most important lesson to be taught by this process is that the owner himself becomes educated in the nature of the disease, so that thereafter he will keep his herd free. Such men will not purchase reacting animals. The dairymen are learning that it is necessary to raise their own cows or to buy them from *sound* herds.

I saw a number of herds both large and small where this method was being or had been carried out. It was quite as effective in the small as in the large herds. The Bang method is generally considered by cattle owners in Denmark to be entirely satisfactory, and if carefully applied to give the desired results. The increased profits accruing to those who have sound herds is tending to bring more and more farmers to apply the method.

If a farmer who applies for assistance refuses to comply with the government demands, the request is denied.

In Denmark the government gives compensation for cases of udder tuberculosis only. Professor Bang would like to have compensation given for cases of open tuberculosis of the lungs, intestines and uterus as well as of the udder.

GERMANY.—In Germany the method of separating the sound from the reacting animals as followed in Denmark is not looked upon with favor, largely because of the difficulty in separating the two classes. At present the law does not provide for compensation to the owners of cattle, although an act recently passed, and which will go into effect in about a year, provides for the condemnation with compensation for open cases of lung, intestine, uterine and udder tuberculosis. There are, however, in the different provinces local regulations, and some of these provide for a small compensation in certain cases.

The method which, for the time, is receiving most attention is that proposed by Dr. Ostertag. It consists in eliminating by slaughter all clinical cases of tuberculosis, removing the calves promptly after birth from their dams and keeping them separated for some months, after which they may be placed with the other cattle. During this early period the calves are to be fed on the milk of sound cows or on the pasteurized (heated to 85° C.) milk of the infected ones. It is considered somewhat safer to prolong the separation until a sound herd is built up. When cattle owners desire to do so, they have their herds tested with tuberculin, but as a rule they do not separate the reactors from the others. The herds are examined frequently by skilled veterinarians and all the animals that exhibit symptoms of tuberculosis are immediately eliminated either by sale or slaughter. In this way it is believed that the disease will be kept in check and eventually the infected animals will disappear. Ostertag thinks that tuberculosis can be eradicated by promptly removing the clinical cases with the simultaneous raising of young cattle free from infection. The Ostertag method is based on the theory that the clinical cases are so largely the spreaders of the virus that the few

occult cases which eliminate tubercle bacilli may be considered as a negligible quantity. In our country, the Ostertag method is generally considered the treatment of the entire existing herd as a tuberculous one, and the building up of a new and sound herd from the offspring.

ENGLAND.—In Great Britain there has been up to the present no direct official effort to control bovine tuberculosis. In many places the milk is more or less regularly examined for tubercle bacteria, and if they are found each of the animals in the herds from which the milk came is carefully examined physically, and the milk of all the cows that are found to be suspicious is examined bacteriologically. If tubercle bacilli are found, the animal is slaughtered at once or, more usually, fattened and killed under inspection for beef. Under the new regulations, tuberculin can be used with the consent of the owner or his agent, but not otherwise.

The procedure which is known as the Manchester method consists in taking milk from the dealers and examining it at regular intervals for tubercle bacteria. Professor Delapin's technique consists, in addition to such microscopic examinations as may be made, of the inoculation of small guinea pigs subcutaneously on the inside of the thigh with the sediment of centrifuged milk and killing them about twenty-one days later for examination. If tuberculosis is found the examination extends to the individual cows in the herd from which the infected milk came. Professor Rubert Boyce of Liverpool stated that by this method they had reduced the infected milk supply in that city to 6 per cent.

There is no restriction on the sale of reacting cows, and ordinarily the milk from the reactors and the non-reactors is mixed and sold, except where children's milk is being produced. The Bang method is being applied to some extent by private owners, but generally it does not seem to be favorably considered. There is no country where the feeling is stronger that bovine tuberculosis is of great sanitary significance than Great Britain. There seems to be no other where so little direct effort has been put forth to eliminate this disease from cattle. The general exam-

ination of the milk for tubercle bacteria has, however, done much indirectly to lessen the number of clinical cases of tuberculosis in the herds of the country.

HOLLAND.—In Holland by Royal decree the government gives facilities for the official inspection of cattle destined for exportation. Further, by a decree of the Queen any cattle owner can present animals to be examined by a government inspector if they are accompanied with a certificate from a veterinarian that the animal or animals are suffering from tuberculosis. If the diagnosis is tuberculosis the animals are slaughtered, and if they pass the inspection their carcasses are sold for food. If the government veterinarian is not sure of the diagnosis on physical examination he employs tuberculin. In all cases when the animals presented are found to be tuberculous, all of the cattle in the herds from which they came are inspected. If the veterinarian is in doubt regarding the diagnosis, the animals are tested with tuberculin. If tubercle bacteria are found in the mucus from the lungs or uterus or in the milk, the cow is killed.

At present cattle belonging to breeders only are killed and compensated for by the government.

Professor Poels thinks that tuberculosis of cattle must be combated slowly. He believes that the only way is to kill off the animals suffering with evident tuberculosis. Bang's method is not favored, in fact it was stated that it was impossible. Professor Poels also lays great emphasis upon physical examination as a means of detecting tuberculosis. He emphasizes the importance of greater skill in clinical examination. With Professor Bang he finds many cases of uterine tuberculosis and places much stress upon the bacteriological examination of uterine discharges.

Professor Poels, like Dr. Ostertag, believes that reacting cows in the absence of clinical symptoms rarely disseminate tubercle bacilli. It is not an unusual practice to feed the calves the mixed milk from the reactors and non-reactors, and later test them with tuberculin and slaughter under inspection for food all that react. The infection under such conditions is so seldom

that the loss is of less importance than the extra work of feeding the calves on sound milk or pasteurized milk from infected cows.

In considering the best method or methods for the control of bovine tuberculosis, the various procedures in the countries visited do not throw much light upon the problem as it confronts the dairymen of this country. The practice in all of the countries mentioned of using the milk from tuberculin reacting cows that do not exhibit symptoms, and the freedom in selling such animals, makes it possible for dairymen to clean up their herds without great financial loss and at the same time encourage them to do so. The experience in Europe tends very strongly to the issue whether in the government control of tuberculosis cases of infection not recognizable on physical examination should be included in so far as compulsion of action is concerned. The lesson from the experience in Denmark is that in order to keep herds free from tuberculosis the owner must be educated in the nature of the disease and that until he is thus educated there is little hope of securing herds permanently free from this disease. The essential value of the Bang method lies in the fact that when a herd is purified by it the owner has become so thoroughly versed in the nature of the disease that he is able thereafter to keep his animals free from it. The impression that methods for the control of tuberculosis can not be too radical so long as the disease is widespread, and that its eradication will be brought about through a process of cutting off the animals that are most active in disseminating the virus and gradually eliminating all that are infected, seems to circumscribe the problem.

THE NEW YORK STATE DEPARTMENT OF AGRICULTURE is continuing its fight against dishonesty in the form of reports on tuberculin tests. The latest success is a judgment of a few days ago in Putnam County against a veterinarian who had issued certificates representing that cows had successfully passed a tuberculin test when no test had been made. The defendant was fined $200 and costs and was debarred from further practice in the state. Some other cases are pending.

REPORTS OF CASES.

HYDROPS OF FOETAL MEMBRANES IN COWS.

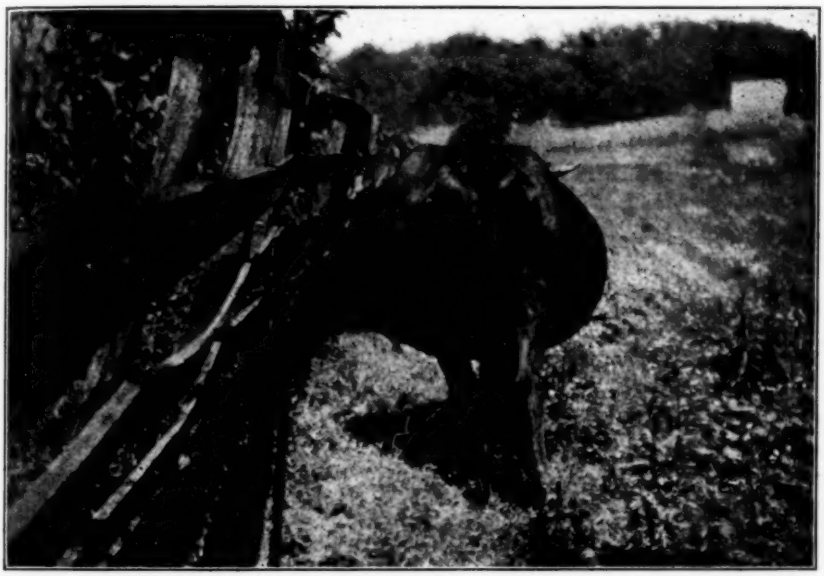
By S. R. Howard, V. S., Hillsboro, Ohio.

The subject of both illustrations the writer saw several times during her eighth month of pregnancy and immediately after she had calved. She stood just four feet in height and at my first visit she measured nine feet in abdominal girth. She delivered a fair-sized dead fœtus and placenta some twenty days after her normal period of gestation had elapsed, losing three feet in girth from measurement made about two months before. Nine feet does not read as much of a circumstance, but when we compare such animals as, for instance, the colossal ox "Jerry," a pure-

bred Holstein-Friesian, owned by J. D. Avery, Buckland, Mass., that measured 17½ hands, 15 feet 11 inches in length, weighing 4,365 pounds, and girth only 1¼ feet more, or 10¼ feet, we can almost imagine the distension of this little six-year-old cow. Of

course she measured more than nine feet when she calved, that occurring about two months after she measured nine feet.

She finally improved and went to market. In twenty odd years of practice I have met a number of such cases. When the mother eats well, has no pain nor fever, appears cheerful and can get up easily even when the normal period of gestation has



arrived or long passed, it has been my practice (with one exception) to let her alone. I admit on good authority that hernia may occur, but such complications are rare. This exceptional case was a very large, aged, debilitated cow, unable to rise, enormously distended, and whose period had passed. I dilated the os and many many gallons of fluid escaped. Using a blunt hook and inserting my entire 31-inch arm, I tried to reach the fœtus, but all in vain, even with the aid of external pressure and bolstering up the fore parts of the cow.

I found I was groping in an immense flaccid cavity containing a perfect sea of fluid. I would remind the beginner that upon exploring the uterus of the cow in this disease, he will discover the inter-corneal partition very close to the os. Don't get rattled. Let it alone! I gave her stimulants, left her in the above position, returned in several hours and delivered an immature calf. The cow died in several hours. The repeated personal experience

of several practitioners has led me to believe that dilating or puncturing the os is very apt to lead the way to a fatal termination. From authority I learn that when the calf from such a cow does survive, it is too feeble and is practically worthless. Anyhow the owner wishes to save the cow. That is plainly our duty. I have operated on a number, and as far as I now remember I have had no bad results. All cases that I have observed have had plenty of range for exercise, and good food.

I mean I have punctured with a good-sized horse trocar the right abdominal wall, thus relieving intra-abdominal pressure. Some splendid authorities advise against this procedure which sometimes produces parturition.

Too copious evacuation must be guarded against, else we may have cerebral anemia, which is bad for the patient and embarrassing to the attendant. Normally the quantity of amniotic fluid of the cow at full time of parturition is about 6 quarts, that of the alontoic being from 7 to 17 quarts. I was once called to treat a small white shorthorn cow that was so distended she had the utmost difficulty in pulling herself through a good-sized door. She was undoubtedly with calf and six months over due. Such enormous distension I never expect to see again. Still she appeared well and actually galloped around the field, so that it was trying to catch her. From the canula inserted low in the right flank, the fluid uninterruptedly streamed with great force for near several hours. This occurred in the fall. By spring she was in fair condition, and it was believed she was still with calf.

With other cattle she went to market. This has been the end of those I treated. Whether one or both membranes are dropsical cannot be clinically diagnosed, and is of trivial importance to the practitioner.

DR. GEO. H. GLOVER acted as assistant superintendent of the cattle department and as one of the live stock judges at the Colorado State Fair held in Pueblo the week of September 19, 1910.

THE NEW YORK STATE VETERINARY MEDICAL SOCIETY kept up its reputation for hard work and much accomplished at the annual meeting at Ithaca, August 25th to 27th last. Splendid papers were presented and earnestly discussed, and nine operations were performed on the last day. A complete report of this important meeting will be published in the next issue of the REVIEW, as space does not permit of it in the present one.

CORRESPONDENCE.

WOODBURY, N. J., September 13, 1910.

Editor AMERICAN VETERINARY REVIEW:

In the last two issues of the Bulletin of the Chicago Veterinary College are articles attacking the methods followed by State Board Examiners and saying in substance that such examinations are ridiculously severe and unpractical.

As an old examiner I do not feel that these strictures are justified, and I crave sufficient of your space to tell the Chicago College staff how the matter looks from the standpoint of the examiner.

First—The *state,* not the examiner, decides what subjects shall be covered by the examination.

Second—The state desires to ascertain through the medium of these examinations two things, *i. e.*, whether the candidate is fitted to serve it in a scientific capacity should it call on him for such service, and whether he is to be trusted to properly care for the live stock owned by its taxpayers. If there is any other object in the state examination it has not come to my notice.

Now while the state has no motives other than those I have just outlined in demanding a state qualification for the practice of veterinary medicine, the profession at large has been greatly benefited by the passage of these laws.

It is a truism that if good money and worn or sweated money are allowed in circulation at the same time (I am of course alluding to coined money) that the poor clipped money will drive the good money out of circulation. No one will pay a debt with a good dollar if he can pay it with a poor one, hence the good money is driven out of circulation; it is hoarded. In a condition of affairs that permits the unlicensed practice of medicine a similar condition necessarily occurs. *The bulk of the students seek the shortest and cheapest cut into the profession.* In thus following the lines of least resistance, they are not necessarily picking out the poor school—they don't know it is poor, they do know that a diploma is easily obtained from it. They see, too,

its graduates competing more or less successfully with men holding diplomas from the great universities, and when the latter ask of them more time and more work, and demand from them a higher grade of examination, they say no. *The poor school crowds out the good school.* Doubt on this subject will be dispelled by comparing the class list of such schools as Cornell or the University of Pennsylvania before and after the establishment of State Boards of Examiners.

Now a State Board must have *some* standard. What shall it be? There can surely be no hardship to any school if the standard is made to correspond with the examinations of the veterinary schools of the highest grade, because these good schools have demonstrated the possibility of maintaining such a standard. The state has a right to demand the best and to insist that it gets it. Furthermore, if any veterinary school on this continent, good, bad, or indifferent, *will make its teaching correspond with its printed announcement,* its graduates will have no difficulty in passing the examination of the most exacting State Board. If teaching schools have an idea that the only function of a State Board of Examiners is to O. K. diplomas, irrespective of the qualifications of their owners, why they have another guess.

Yours very respectfully,

T. B. ROGERS, D.V.S.

CAMP GREGG, P. I., July 20, 1910.

Editors AMERICAN VETERINARY REVIEW, New York City:

Please inform me through the REVIEW what is meant by a "Mule Foot Hog," and oblige.

Yours respectfully,

FRED FOSTER, Vet. 2d F. A.

TWENTY-FIVE states, the District of Columbia, British Columbia, Canada, and New Zealand were represented at the A. V. M. A. convention in San Francisco.

THE freshman class of the Colorado Agricultural College has increased 100 per cent. this year. The Division of Veterinary Science is holding its own with the other divisions.

OBITUARY.

ANDREW SMITH, V.S. (Edin), F.R.C.V.S.

Professor Andrew Smith died at his home in Toronto, Canada, on August 15, last, at the good old age of seventy-five years. Professor Smith was born at Dalrymple, Scotland, in 1835. When he had reached maturity his love of animals, good horses particularly, led him to take up the study of veterinary medicine; and being a Scotchman, he naturally turned to the renowned leader of his profession in his native land, Professor Dick, of Edinburgh. In those early days, qualified veterinarians were few in Canada, as was the case in the United States, and, at the persuasion of a large number of owners of good horses in that country, Professor Smith came there in 1861 and had been there but a year when he gave a course of lectures to a small class of students in Toronto, which formed the nucleus from which developed the Ontario Veterinary College, of which he remained the active head until it was taken over by the University of Toronto in 1908. "Andy" Smith, as he was affectionately termed, was the most widely known veterinarian in America, having passed three thousand students from his school, who are located all over the United States and Canada, whom he had the happy faculty of remembering whenever and wherever he met them. He was a man highly respected in the community in which he lived his long life. The high esteem in which he was held by his friends and neighbors, and the powerful influence he had among them, attest the integrity and the strength of character that was mingled with his gentle, kindly nature.

SIMON JACOB JOHN HARGER, V.M.D.

Dr. Simon J. J. Harger died at his home in Philadelphia, Pa., the end of August last, after a very brief illness in the form of an acute intestinal obstruction, in his forty-sixth year. Born at

Hechtown, Pa., he received his early education in the public schools of his native county (Northampton), finishing at the Keystone Normal School at Kutztown in 1884, when he entered the Veterinary Department of the University of Pennsylvania, from which school he graduated in 1887, when, from his peculiar liking for and proficiency in anatomy, he was made demonstrator for his alma mater the same year. Four years later he was made Professor of Veterinary Anatomy and Zootechnics, which position he held at the time of his death.

As a teacher he was loved and respected by his pupils, as attested by the fact that at the close of the school term in June last, the *Veterinary Record*, published by the senior class, was dedicated to him in the following beautiful words: * * * "Deeply mindful of his many kindnesses, and sincerely appreciating his many personal sacrifices for our benefit, we, the class of 1910, dedicate this volume, our class record, to Dr. Simon J. J. Harger."

In literature he has done much for which the veterinary profession is his debtor. His translation of the work of Gonbaux and Barrier, on the "Exterior of the Horse," has been of incalculable value to the profession, and has laid the ground work from which many veterinary students have developed into connoisseurs on the horse.

He was an editor on the *Veterinary Magazine*, 1894-7. During his professional life, Dr. Harger has always engaged in general practice in the city of Philadelphia, with a natural taste for surgery in which he had more than ordinary ability, and was an expert in certain special operations.

He was an active member of the American, Pennsylvania and Keystone Veterinary Medical Associations, and was not only always willing to contribute his full share of work to them, but also to other veterinary associations of which he was not a member. His loss will be keenly felt by all whose privilege it was to have known him, and *especially* by his co-workers in the University of Pennsylvania Veterinary School.

RICHARD EDWARD BUCKLEY, D.V.S.

Dr. Richard E. Buckley died at Rutland, Mass., where he had been sojourning for his health, on August 19 last, in his forty-fourth year, from a lingering illness.

Dr. Buckley graduated from the American Veterinary College in 1887, and had practised his profession in New York City up to the time that he became ill, when he went to the country with the hope of benefiting his health.

He had had complete charge of the horses of the George Ehret brewery ever since he began to practice his profession, and had also, for a number of years, been a municipal veterinarian. He is survived by his father and a brother, who is also a veterinarian.

Just as we are closing our forms, we have learned of the deaths of Dr. Henry Moore, of Albany, N. Y., at the ripe old age of 96 years, and of Dr. William R. Howe, of Indianapolis, Ind. Dr. Moore's death occurred on September 19th, and Dr. Howe departed this world May 31st last.

PRESIDENT HOLLINGWORTH, in his address to the members of the New York State Veterinary Medical Society at Ithaca the last week in August, dealt with seventeen different topics, to all of which he had evidently given considerable thought.

WE note with regret, in the *Boston Journal* of September 29th, the appointment by Governor Draper, of Massachusetts, of a layman to succeed a veterinarian as Chief of the Cattle Commission of that commonwealth. For while the newly appointed chief, Mr. Fred. Freeland Walker, of Burlington, an extensive raiser of Holstein and Jersey cattle, Master of Woburn Grange, member of the Massachusetts Cattle Owners' Association and of the New England Holstein-Friesian Breeders' Club, who is probably as estimable a gentleman as he is evidently a progressive one, would no doubt have been a valuable acquisition to a commission of that kind with a qualified veterinarian at its head, it is not likely that the gentleman in question differs from *most* other laymen in his inability to appreciate and cope with the numerous medical problems that are constantly cropping up in a position of that nature, that can only be met by men who have been educated and trained along veterinary medical lines.

SOCIETY MEETINGS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

The forty-seventh annual meeting of the American Veterinary Medical Association was called to order in the Gold Room of the Palace Hotel, San Francisco, California, Tuesday, September, 6 1910, President A. D. Melvin in the chair.

THE PRESIDENT—The forty-seventh annual meeting of the American Veterinary Medical Association is now declared formally opened. It is a great pleasure indeed for me to meet with all of the comrades under these various magnificent and pleasant surroundings. Many of us have traveled quite a distance over the hot sand to get here, some of us for the second time, but we are all here nevertheless, and safely here, after somewhat threatening circumstances.

The city in which we now meet is one of the most remarkable, considering the great disaster which happened here four years ago, and the civic enterprise and pride which has been exhibited here, that is to be found anywhere. The solidity and splendor with which the city has been rebuilt on the magnificent scale which we see here at present is one of the marvels of the Western Hemisphere, and it affords me great pleasure to introduce the gentleman who is now in charge of the city government here, Mayor McCarthy.

MAYOR MCCARTHY—Mr. Chairman and members of the American Veterinary Medical Association in attendance at this convention, allow me to say to you, or allow me to assure you that I am indeed very much pleased at being, on behalf of the people of this city and town, afforded the opportunity to look into your countenances this morning and welcome you to our city of San Francisco, and, as you may have gathered from the remarks of your chairman, we are indeed glad to occupy now a position of being able to entertain people from abroad. There was a time after the great happening here when we could not do that. During that time every effort of the government and

of our citizens was devoted to taking care of ourselves, but having finished that job, as we think in fairly good shape, we are now happy indeed, as I have just said to you, to entertain people from abroad. You are now in a city, or meeting in a convention in a city whose people have overcome, or the people of which (to put it in a little better form) have overcome more trouble and more dangers than any other city in the universe anywhere. I say that advisedly. Many there are who are under the impression that we had a tremendous shaking up of the earth's surface on which the city rests. Many there are who feel that the destruction of this great city of ours, which, my friends, was one of the greatest cities within the boundary lines of America, on the 18th day of April, 1906, was due to a disturbance of the earth, but such was not the case. This magnificent building, within the walls of which you are about to meet, was in every respect, save and except the method of building and structure, just as magnificent then as it is now. There is not one solitary part of the building which was removed in the remotest manner from its moorings by what is supposed to have been the wonderful earthquake that took place in San Francisco on that date. Not one building constructed with up-to-date methods suffered in the least. But they did suffer from that destroying element which up to date the most intelligent, the most painstaking engineers and architects of this and other countries have failed to offset or to prevent—fire. It has been the custom of this great city of ours, and I do not say this because I am a Californian; I was not born here; I am not a native son; I was born across the water; not even born in the United States. I call this to your attention, and I say it because experience has taught me to know and understand thoroughly that the people of San Francisco when they take hold of anything from the standpoint of doing it, do it pretty well, and give it as bold a front, as massive, complete and thorough an appearance as any people with whom I have had the pleasure of meeting anywhere. The fire with which the city was stricken carrying out that policy as it were, the principle and platform of the people of this city, when it came along it proceeded to eat things up on such a magnitude that it surprised even the old-time San Franciscans at the manner in which it discharged the duties of its terrible office. The San Francisco fire, ladies and gentlemen, was greater from the standpoint of destruction, than any that has ever taken place in the civilized world. You will

possibly realize the magnitude of it when I say to you—and, in fact, figures do not lie, though some of them who put the figures down do—but the statistics are clear, and you will see when I say to you that the fire which began with the 18th day of April, 1906, within the boundary lines of this city and county, destroyed property, real and personal, to the extent of two hundred and thirty-five millions of dollars, more than the Chicago, more than the Baltimore, Chicago and Boston fires combined. I think you will then realize the loss that the people bore who lived in this city, and you will, I hope, be satisfied that this hope of mine is going to come true and is going to be realized, namely, that San Francisco is soon to become, if, in fact, she has not already taken her place again as one of the leading cities of the world, because, knowing as I do the character, reputation and standing for hospitality of the citizens of this city, and knowing as I do the energy, resources and determination of the men who live here, I know that this hope will be realized. I have a further hope, ladies and gentlemen, which I wish to lay before you, and that hope is that before you leave us you will make it your business to go around this city and see for yourselves the improvements made by the people of this city since that fire cooled in a manner calculated to give us an opportunity to proceed with the reconstruction. No city in the world, no people living in any city of the world of which I have any knowledge, have displayed a greater courage and presented that determination and grit characteristic of the American citizen to a greater degree than the people of San Francisco in rebuilding, and that, too, with very little financial assistance from abroad. (Applause.) Not but what we are always in as hospitable a mood and as willing to reciprocate hospitality as are the people living in any other location in this or any other country, but the spirit of '49, that spirit which came from beyond the Rockies, that came from your states and from each and every one of your locations at home, possibly the spirit which led the pioneers across the Sierras and the Desert to find homes in California, it was those men—men filled with that spirit who survived the shock; it was those men who grappled with the enormous difficulties with which they were confronted—it was those men, as well as their children and their children's children, so that the very moment the opportunity was presented to them they proceeded to rebuild the old city, and to rebuild it in a manner calculated to exceed in magnificence and solidity the city which was

destroyed, and, my friends, I say it to you without any feeling of reasonable contradiction, they have proceeded with this reconstruction of the city in a manner to withstand an attack from the forces of the earth, even if it come, which God grant they never may to visit our people again. This structure may be taken as a sample of the whole, but to get an accurate idea of what has been done here, one must go up fourteen, fifteen, sixteen or twenty stories on one of the high buildings, go up on the top of the Fairmount Hotel where you can look all over the city, and then you will see within the boundary lines of these twenty-seven miles of territory spread out before you, how generally everything was eaten up by that terrible fire; churches, banking houses, libraries, business blocks, residences and apartment houses, licked up by fire as clean as the floor, so that people living here hardly knew their own property and then as you look over the change you will see what has been done since that day in the way of reconstruction. I think if some of you will do that you will say to yourselves, as I have had faith to express to you here, that the people of San Francisco have certainly done a tremendous work.

Now, ladies and gentlemen, speaking as the mayor of this city, I want to give to you an expression of opinion from all our people, and let me say to you that I sincerely hope and trust you will make it your business to see this town before you go; also the many attractive features of our city which you cannot see from the high places, but to which you must travel in a first-class conveyance in order to see in all their beauty. We have an abundance of the fastest machines in the world, and some of the finest horse flesh that has ever been raised within these United States is right here in San Francisco. We want you to take in all of these places, we want you to see not only what we have done, but what we have got here to be proud of, and, as the Mayor of this city, I am here this morning to welcome you to the city and I extend the heartiest greeting and the most complete possession of San Francisco in every manner with which your desires may be associated while you are with us, and without any restriction whatever or any annoyance. The keys of this city will be turned over to the chairman, and everything that we can do will be done to make it pleasant, and if there is anything that you want, you will kindly confer a favor upon the people of our city if you will make your wants known to the chairman, and if he does not let us know, then we will be

here to follow him up in order to punish him for not doing it. (Applause.)

Your society, your association, professional as it is, is a power for good. We are glad that you are with us. I can speak from experience. While close to our state, not removed by many thousands of miles, not by any means as far as from here to New York, through an unfortunate impact between an automobile and a street car, I had my foot broken in three different ways. I had professional services rendered to me in that city where I happened to be at the time from different branches of the medical profession, some from your profession, and, from the standpoint of the layman, with beneficial effect, so that I was fixed up so that I could get to this city finally. Your profession is one of those to which the world owes a great debt. The world owes a great debt to you because you are searchers of the science of health. The world will never be able to repay those of you who burn the midnight oil in order to get something to serve not yourselves, not to bring you wealth, power or fame, but to bring you knowledge and information in order to help some person or some animal. I repeat, the world owes you a debt that it will be very hard for it to pay. This city and this state owes you a debt for coming here and for giving us the opportunity to pay it, with the keys of the city turned over to your chairman. I am glad of this opportunity to say these few things to you and to offer you, on behalf of San Francisco, the freedom of this town. San Francisco is yours. Use it in any manner you see fit, and we will assist you in making it as pleasant for you as we can. I thank you. (Applause.)

THE PRESIDENT—We have listened to a most hearty welcome indeed from the worthy Mayor of San Francisco, and we will now have the pleasure of hearing a response to his address of welcome from our friend, counsellor and comrade, Dr. Rutherford.

DR. RUTHERFORD—Mr. President, Mr. Mayor, Ladies and Gentlemen—We have attended a great many meetings of the American Veterinary Medical Association, and we have been accorded many welcomes, but never, to my recollection has it been our privilege to receive so cordial, so eloquent, and so interesting a welcome as we have received this morning from his Honor, the Mayor of San Francisco. I am sure that we all ought to feel very much better in many ways than we did a few

minutes ago, and above all, sir, I think we ought to feel very much richer because each and every one of us now, individually, is the owner of this great city of San Francisco. You have just given it to us. Most of us would be glad to own a comparatively insignificent city and even a town lot or two might do for many of us but when we realize that this is no common city, no mean city, but that the city of San Francisco is ours, and that it has been given to us this morning by its Mayor, I am sure that we all realize the great wealth that has fallen to us so unexpectedly. (Laughter.)

We have come, many of us, a very long way, to San Francisco. This was my third attempt, speaking for myself, to reach this city. I tried twice before. Unfortunately, I was prevented by other things which came up and did not reach here, and somehow or other I felt the other day when I began my third attempt to reach San Francisco that something might happen to prevent, and when the other morning I saw the engine and cars of the train on which I was traveling to San Francisco out there in the middle of the Montana desert, I said to myself, "It has happened again." (Laughter.) However, we got here, and we are here and we appreciate the fact that we are here to a very much greater extent than perhaps the Mayor of this great city can imagine or realize.

There is not a man or woman—perhaps I ought to reverse the order of the sexes in my sentence—but I know there is not a man or woman in this room who has not had a very lively anticipation of the pleasure of visiting San Francisco, California. There is something about San Francisco, and something about California, which appeals to everyone in the civilized world. There is an element of the romantic in California, and you know the romantic is something which appeals to most every one. Away back, I do not like to say how many years ago, but it is a great many, I had the privilege of reading one of Bayard Taylor's works, whom, as you know, was one of the older American authors, and I remember in what I read in that book he described this country as it was originally and in the forty-nine years that followed. What he said has been with me in my memory ever since. Then came Brete Harte who described California as he saw it We have not all seen it as Brete Harte saw it because he never was able to realize that California had become modernized or that it was not the California of '49 or '59 but the California of to-day. That criticism was always

done by Californians, and I have always thought it was rather foolish because any country can be modernized nowadays. Any country can be made businesslike. Any country can be made progressive and commercial, but it is a very rare country indeed which in these days of large business enterprises, progress, hustle and hurry, it is a very rare country indeed that can afford to be romantic. And it has been rather difficult for me to find any fault with Brete Harte because he was conveying the impression to some few reading people that they were romantic and that California was a romantic place. Well, we know more about California than perhaps our California friends imagine. We have always had a good impression of California, and that good impression has been strengthened, improved and added to year after year as the years have gone by. The Scripture says, "By their fruits ye shall know them." We representatives from Canada call your California fruit good. We buy it, and we pay for it, I assure you. (Laughter.) We beg to assure you, Mr. Mayor and, through you, the people of the city of San Francisco, that we believe it has been a very capital thing for California that she has had these little missionaries going out all over the world, because if "by their fruits ye shall know them," we are justified in assuming that the people themselves are as good as their fruit, and, therefore, naturally we expected to find a very high class of people when we came here.

I do not know whether San Francisco was named after St. Francis of Assisi. I am a little lame on the thing. When it comes to identifying all of the saints with the cities that have been named after them, I have to confess that I am somewhat lame. I am not sure as to the identity of them all. I have met very few of them in my time. (Laughter.) Those that I have been associating with, however, say that so far as they have known them they have not known of their presence in California, especially during her early days. (Laughter.) But there was a St. Francis of Assisi whose specialty was doing good with animals. In fact, he devoted his whole life to the care of animals, to the obliteration of cruelty, and to the encouragement of kindness to animals. In fact, he was greatly interested in the prevention of cruelty of any kind. I was thinking if this same St. Francis of Assisi might not be responsible for the naming of San Francisco, California, whether it might not be one and the same person, it is a particularly fortunate and appropriate thing that we are meeting here to-day because

our whole lives are devoted to the relief of pain and suffering in the lower animals. Of course, we need not dwell upon that phase of the subject for the present, but it has occurred to me that it might be well to look up St. Francis of Assisi and satisfy ourselves as to whether or not San Francisco is named after him.

Now we have all a very distinct and painful recollection of the impression which was created, not only throughout the whole of America, but throughout the whole world by the sad news which was flashed along the broken and stammering telegraph wires four years ago last April to the effect that this city, with all its wealth and precious associations, was but a heap of smoking ruins. The sympathy which was felt for the people of this city can hardly be expressed. It is beyond words, and that sympathy, that sorrow which was felt for the people of the city is only equaled by the feeling of astonishment and feeling of admiration which everyone has for the courage and enterprise which has restored that city. Yes, not only restored it, but erected on its ashes a city perhaps five times as magnificent as that which was destroyed. (Applause.) We have to-day ocular evidence of what has been done in this direction. We appreciate it very fully. We have listened to the earnest and heartfelt words of the Mayor when he told us some little details of the struggles through which this great community has passed, and I can assure him that he had our sympathy, not only the sympathy of this body, the American Veterinary Medical Association, which, in our own eyes, is a very great body, but it is more important still as a portion of the great American community, and of the whole world which was of the same mind with reference to the great disaster which overtook you four years ago. There never was a similar instance of enterprise, and there never was a case in which so much has been done in so short a time, and in which such magnificent courage was manifested and displayed as in this particular instance. Truly, the people of San Francisco are to be congratulated and commended for the splendid showing which they have made in recovering from that catastrophe.

We thank you, Mr. Mayor, for your kindly welcome. We intend to take full advantage of it, and I feel that you may be surprised if you deliver the keys to our worthy president, that you will be surprised at the difficulty which you may have in getting in yourself (Laughter) if you happen to come home a

little late, because just as soon as we get the keys we will see that the city is carefully locked up every night. We thank you for your welcome. We will do our best to behave ourselves, and not to injure the property which you have so kindly entrusted to us. (Applause.)

MAYOR MCCARTHY—Mr. Chairman, Ladies and Gentlemen: Having a few matters to attend to on behalf of the city, I must withdraw, but wish to say before departing that I sincerely hope and trust that you will take full advantage of the keys of the city, and that you will do just as you see fit to serve the purpose and pleasures of those who are with you, and if you do that, I assure you you will not inconvenience me or the citizens of San Francisco in the least.

I appreciate very keenly the words which Dr. Rutherford has so aptly and appropriately addressed. I am very much pleased with the kindly expression of Dr. Rutherford, and I am sure if our citizens could have heard him this morning they would join with me in that regard. If they could have heard what I have heard him say this morning, our citizens would put it all over him, to put it mildly. We are a sympathetic people here, and we delight to know that we have the sympathy and kindly feelings of those abroad, both in our own country and in other countries, including Canada, our sister nation, yet peopled with a people who have come from virtually the same sources as we in America. The Canadians have always been a sympathetic people. Everything I said to you, every word I uttered here regarding the privileges which you have, and your ownership in our real and personal property, is true, and you will find no difference of opinion, I am sure, among our people with reference to that point. We are a united people in most all essential things, and while we have our little differences the same as the people in most all communities have, although I think we have ours principally in some of the newspapers, but we do not feel so sadly when once in a while we clash, that is, in the opinion of the newspaper world. Everything that I said to you is true, and my only fear is that you will not accept it, the words of Dr. Rutherford to the contrary notwithstanding. I believe if the truth were known that the doctor himself is one of those who will take in all of the sights. Any man who is mighty enough to put four railroad coaches in a ditch and then to come out with his associates uninjured, speaks most highly for the profession. (Laughter.)

Now, Mr. Chairman, permit me to take your hand in leaving. I hope you will enjoy yourself as you have never done before.

After Mayor McCarthy had departed from the convention hall amid hearty applause, the president delivered the annual address, as follows:

PRESIDENT MELVIN'S ADDRESS.

For the first time in its history of nearly half a century the American Veterinary Medical Association meets on the Pacific Coast. This gathering at the Golden Gate on the western shore of the continent is significant of the gratifying growth of our association, a growth not only in numbers and in territory represented, but in standing and prestige and in things accomplished.

In the early years of its existence, with a membership consisting of a little group of progressive and loyal veterinarians in the East, the meetings were all held in New York and Boston. In 1870 the semi-annual meeting was called for Philadelphia, but a quorum was not present. In 1884 the association invaded the Middle West and met at Cincinnati. After that the meetings continued to be held in the East for several years until Chicago was reached in 1890. Several conventions have since been held in the West, the most western point until the present year being Omaha in 1898. In 1903 the association met at Ottawa, in recognition of the considerable and increasing number of our Canadian brethren who had come into our membership. This year in coming to San Francisco we have completely spanned the continent.

Although this is our first convention on the Pacific Coast, the association has for many years had a goodly membership in the far West, and these have been among the most progressive and zealous members of the profession. The vast live stock interests of the West have naturally required the services of many veterinarians, both in private practice and in the public service. It is fitting that this important element of our membership has been recognized in the selection of a place for this meeting. There are enough members in this section of the country to insure a successful convention here, and those who have made the long journey from the East will find it an interesting experience well worth the time and expense involved.

The veterinary profession affords a worthy field for the exercise of the highest talents. The processes of nature are no less wonderful and abstruse in the lower animal organism than in the human organism, with perhaps the single exception of those pertaining to the human mind and soul; and just as great ability is required to explore and solve the mysteries of animal life and its morbid conditions as to do similar work with regard to the human race. If there is any difference in the importance of the work relating to animals as compared with that relating to human beings, this is only because of the higher value of human life, and not because of any essential difference in the problems to be dealt with. To minister to God's dumb creatures is indeed a worthy calling, and it becomes still nobler when we perceive with the advance of science the serious bearing of animal maladies on human health and life. And it can be said to the credit of those who have adopted this profession that veterinary science has fully kept pace with the advancement of other branches of science, and in some instances has even led the way.

This association has ever been a strong factor in the uplifting of the veterinary profession. It has stood for better professional education, for scientific advancement, and for high moral and ethical standards. From the beginning its membership has comprised the foremost veterinarians of the United States, and in recent years those of Canada; and it is largely through the efforts of this body that the position of respect, prestige and dignity now held by the profession has been attained. The uneducated empiric has largely given way to the modern veterinarian educated in the various branches of veterinary science. This body has had a creditable share in bringing about higher standards of education in veterinary colleges, and I am safe in saying that it still stands for those principles. The papers, reports, and discussions at its meetings have been of great practical and scientific value, and these published proceedings constitute an important part of veterinary literature. The profession is to be congratulated upon having an organization of such high aims and achievements, and veterinarians throughout the United States and Canada owe it to the profession and to themselves to give to this association their support and allegiance. The large and increasing membership is good evidence that the benefits of the association are recognized and appreciated by the profession. The requirements for membership are such that membership in this body should be regarded as something of a distinction.

The Bureau of Animal Industry, employing as it does a large number of veterinarians and having to deal with many problems requiring the services of trained and competent men, has endeavored to assist in the effort to raise the standard of veterinary education. During the past two years the bureau has investigated the courses of study and facilities for instruction at practically all veterinary schools in the United States and Canada, and the Secretary of Agriculture and the United States Civil Service Commission have prescribed certain requirements which must be met by a college in order for its graduates to be eligible to the Bureau Service. It is very gratifying to know that this effort has resulted in accomplishing the desired object to a great extent, and that the standards of the veterinary schools have been raised in some instances fully 50 per cent. The importance with which schools regard the bureau service is shown by the fact that nearly all schools have endeavored to conform to the requirements.

The training given by the colleges is of the highest value in equipping a young man for a career in the veterinary profession, yet certain natural endowments and elementary education are also important. The most practical veterinarians as a rule come from the farm; they are young men who have had experience in handling live stock and who have natural aptitude for veterinary work. This is especially true of those who are best fitted to be general practitioners. The young men of city education, however, often excel in scientific and research work and in special branches. The requirements for entrance to veterinary colleges should not be so high or exacting as to bar the young men from the country who have a fair basic education, but do not possess a degree.

It is said that a young man fresh from college knows more in his own estimation than he will know at any subsequent period of his career. It is a fact, nevertheless, that the veterinary graduate of to-day is far better equipped for his life work than was the graduate of yesterday. He lacks practical experience, but that can be acquired, and he has a good foundation on which to build it. On the other hand, what the graduate or even the non-graduate of the past lacked in educational training he has in many cases made up by experience in the course of practice and by the study of veterinary literature. It was never more important than at the present time that the veterinarian in order to be successful should keep abreast of modern progress.

The few who engage in scientific research and those who give instruction in our schools are likely to do this anyhow. But the great rank and file of the profession should not be content with the skill developed in practice or in their special work, but should ever be close students of the latest literature so as to be prepared to avail themselves of the best and latest knowledge and discoveries.

The vast majority of veterinarians of the United States and Canada are men of high integrity and are a credit to the profession. In every profession, however, some unworthy members are to be found, and our is no exception. Occasionally evidence is found of fraudulent practices upon the part of some veterinarian, which bring discredit upon the profession, such as the use of tuberculin for the purpose of rendering subsequent tests ineffective, and the making of inefficient tests and the rendering of false charts. This association should and does stand not only for high attainments, but for high character in its members and in the profession. By discountenancing and severely condemning such fraudulent practices, and by ostracizing men who are known to be guilty of them, we can do much to remove the reproach which they bring upon an honorable profession.

The veterinary profession can do great public good by disseminating correct views and information as to the diseases of animals. I wish to single out a former president of the association, Dr. Dalrymple, who has done much in this respect. Ignorance and erroneous views often prevail, and the danger of certain contagious diseases is not generally understood by the people. This is especially true of such diseases as tuberculosis and rabies. Many dairymen see no wrong in selling milk from tuberculous cows, especially when the disease has not reached a very advanced stage or does not affect the udder; whereas veterinary investigators have shown beyond doubt that cows of good outward appearance are often sources of grave danger. Perhaps rabies is the subject of more popular misconception and mystery than any other disease, yet the true nature of this malady is well understood by veterinarians. Many stock raisers do not realize the necessity for destroying the carcasses of animals that have died of anthrax, or the precautions that must be taken to prevent the spread of various contagious diseases. In matters such as these the veterinarian often has opportunity for doing a valuable educational work in his community. He should always be practical, and not too theoretical. Much of the opposi-

tion of stock owners and the public to the enforcement of live stock sanitary measures is due to lack of knowledge as to the nature of animal diseases and as to the harm done by allowing them to continue and the steps which veterinary science has shown to be necessary in dealing with them. Sometimes, however, opposition is due to a too radical position taken by veterinarians, a position which, while perhaps theoretically correct, does not make sufficient allowance for practical difficulties and the losses that may be entailed on stock owners. By taking a sensible middle ground and not endeavoring to adapt scientific theory to practical conditions with the least possible loss and inconvenience to the live stock industry, we can best succeed in dealing with such problems.

The control of tuberculosis is one of the most important problems now confronting the veterinary profession. It concerns not only the official veterinarian but the private practitioner. We have just cause for pride in the creditable part that the veterinary profession has taken in the scientific investigations throughout the world that have thrown light on the nature of this disease and the methods that must be followed for its suppression. Some of the most brilliant work in this field has been done by our profession. Throughout all the doubt and disputation in which the tuberculosis problem has been involved during the last ten years the great majority of veterinarians have held the view, well founded on scientific investigations in comparative pathology and bacteriology, that tuberculosis is communicable from bovine animals to man; and it is greatly to the credit of the profession that the correctness of this position is being steadily confirmed with the progress of scientific research. If, as seems practically certain, tuberculosis is communicable from the bovine to the human species, the problem is a vastly more serious one than if only the animal side of the question were to be considered; and the veterinary profession must have a leading part in bringing about a solution.

In my judgment the time has come for federal and state authorities to unite in some comprehensive plan for the gradual eradication of tuberculosis from cattle and hogs. As a preliminary step we should determine in what localities tuberculosis exists to the greatest extent (where this has not already been done); then the tuberculin test should be generally and systematically applied to cattle in those particular sections. Where reacting animals are of special value the herd may be handled ac-

cording to the Bang system, but under ordinary conditions it is advisable to slaughter the diseased animals. In order to reduce the financial loss to a minimum and at the same time guard against the sale of unwholesome meat, such slaughtering should be done at abattoirs that are under federal or other competent veterinary inspection. In this way a large proportion may be safely passed for food and made to yield their full meat value, while only those whose meat may be dangerous to health will be condemned. As the slaughter of tuberculous cattle would be done largely as a public health measure, it is only reasonable that the state should pay indemnity, at least in part.

In the District of Columbia tuberculosis has been dealt with as a contagious disease. During the past year all cattle have been tested with tuberculin, the reactors slaughtered under inspection, and the owners reimbursed. Retests of herds where disease has been found are made at intervals of six months and the tuberculin test is required as a condition to bringing cattle into the District.

This association at its last meeting recognized the gravity of the tuberculosis problem by appointing a commission to consider the subject and report as to the best methods of dealing with the problem, and the report of this committee at this convention is expected to fix a basis for a sound policy.

While the work of eradicating tuberculosis will devolve mainly upon official veterinarians, the practitioner can render good service. He can disseminate correct information on the subject among stock owners and can give advice to his clients that will enable them to keep the disease out of their herds, or to make proper disposition of animals if they already have it, without waiting for official action.

Fairs and live stock shows as at present conducted afford favorable conditions for the spread of tuberculosis. Cattle are brought together from various places, and there is frequently a considerable proportion of tuberculous animals among those exhibited. As a rule nothing is done by the management to determine whether or not animals offered for exhibition are healthy, and prizes are given indiscriminately to those presenting the best appearance without regard to whether or not they are affected with tuberculosis. The suggestion has been made that prizes should be given only to animals that are in a healthy condition, and that the presence of tuberculosis or other contagious disease shoud constitute a disqualification. In fact, ani-

mals should not be admitted at all to such exhibitions unless their health is assured. Veterinarians are usually employed in connection with live-stock exhibitions, and they can doubtless by their advice and influence do much to bring about a reform.

The past year has been marked by steady advancement in various lines of veterinary work. Domestic animals are constantly enhancing in value, and it is becoming more and more to the interest of their owners to have them provided with the best veterinary attention. This condition offers a good field for the practitioner, and inducements for entering practice were probably never so great as to-day.

In the administrative work of the public service gratifying progress has been made in the warfare against contagious diseases. Continued headway in eradicating scabies of sheep and cattle has led to the removal of the quarantines from large additional areas in the West, and we are hopeful that the end of these diseases in the United States is in sight. The stupendous undertaking of exterminating the catte ticks, which means so much for agriculture and the live stock industry in the South, is progressing so favorably as to give assurance that in the course of some years we shall succeed in eradicating this pest from the United States and thus add another triumph to those already achieved by veterinary sanitary science in successfully combating pleuro-pneumonia and foot-and-mouth disease. Already the beneficial results of this work are being realized to a substantial degree in the localities which have so far been freed from ticks.

About two years ago we were confronted with a virulent form of necrobacillosis which appeared among sheep in Wyoming and threatened to spread and do great damage to the sheep industry and perhaps to extend to other species. It is a cause for congratulation that the quarantine and methods of treatment carried out under the direction and co-operation of federal and state officers, aided perhaps by the drouth of the past season, has greatly reduced the prevalence of this disease. About one-fourth of the area under quarantine a year ago was recently released, and the number of cases in the territory remaining in quarantine has been reduced about 50 or 75 per cent. We hope to be able to release two or three more counties during the coming winter, and with a continuance of favorable conditions the complete removal of the quarantine should follow within another year or two.

The Bureau of Animal Industry has continued its work on hog cholera with a view of perfecting the serum treatment and to rendering this treatment available to the hog raisers of the country through the co-operation of state authorities. The preparation of serum is being successfully and economically carried on by a number of states.

Much good work has been done during the year by the authorities of several cities and states, aided by the Bureau, in the way of improving the wholesomeness of the milk supply.

In the field of scientific research some good work has also been done. A number of investigators have continued their study of tuberculosis, and other diseases have also been studied, with the result that our knowledge is constantly being increased. Special attention has been given to the obscure disease known as bighead of sheep; and while a solution has not been reached, certain facts have been learned which indicate the course to be followed in further investigation and give hope of an ultimate solution. One of the most promising investigations of the year relates to a new method for the diagnosis of glanders. This method was suggested to the Bureau of Animal Industry by a foreign correspondent, and work so far done by the Bureau indicates that it is remarkably successful and practicable and will be a great improvement over the mallein test and other methods of diagnosis now in use. A paper describing this work will be presented at this meeting.

The federal meat inspection engages the services of more veterinarians than does any other branch of the public service. This inspection now covers slightly more than half of the total meat supply of the United States. Most of the remainder is not inspected at all, while a small part of it receives some kind of inspection by state or municipal authorities. I have strongly advocated that this vast amount of uninspected meat, which does not enter interstate or export trade and is therefore beyond the reach of the federal government, should be looked after by the states and municipalities; and I have advised that the only way to secure efficient inspection is to have it done so far as possible by competent veterinarians at the time of slaughter. It is necessary for the protection of public health that the states and municipalities should provide inspection for meat killed and sold locally, and in some states and cities the importance of doing this is being felt and steps are being taken or consid-

ered for establishing inspection. This work opens another field for the services of the veterinarian.

Conservation is a topic about which very much is heard nowadays, and a public address that did not make some reference to it could not be regarded as at all complete. It is pleasing to know that the veterinarian is really an important factor in this worthy cause. The value of the work of the veterinary profession, while better appreciated now than formerly, is not yet generally realized. This work promotes the conservation of our domestic animals, which means the conservation of a very important part of the food supply of the people, and in turn the conservation of human health and life, which after all is the acme of conservation. As has been truly stated by a prominent citizen of this state, the conservation of food comes before morals or religion. Viewed in this light, the work of the veterinarian is not only of great economic value; it is something still higher; it is an important agency for human welfare.

That this high conception of the sphere of the veterinarian is not recognized in some quarters is shown by the proposal to create in our national government a Department of Public Health, and to transfer to that department the entire veterinary service of the Department of Agriculture, thus removing from the direction of the veterinary profession the work which it has built up and of which it has been in charge for so many years, and placing this work under the charge of the medical profession. The general proposition to provide better government facilities for safeguarding and promoting human health is entirely commendable and calls for our support rather than opposition. It is only with the special plan proposed for accomplishing this object that we can find fault. I believe that the advocates of a Department of Health have been carried away by zeal in a good cause and have proposed to include in the new department branches of the government service which really do not belong there, but I doubt if they can ever be brought fully to this point of view.

Several bills are pending in Congress for the establishment of a Department of Bureau of Public Health. By the bill that is being most actively pushed it is proposed to establish a new executive department and to transfer to that department not only the Bureau of Animal Industry and certain other branches of the Department of Agriculture, but all matters within the

control of the federal government relating to "diseases of animal life" and all departments and bureaus (excepting those in the War and Navy Departments) "affecting the * * * biological * * * service, or any questions relative thereto." This language is so broad as to cover work relating to plant life, such as forestry, the growing of field crops, fruit culture, etc. To place work of this kind in a Department of Public Health is so preposterous that I am sure the advocates of the measure do not really intend to do this; yet such is the meaning of the language employed in the bill. Other bills not so sweeping in scope provide for the transfer to the proposed Department or Bureau of Public Health of certain portions of the work of the Bureau of Animal Industry, such as the meat inspection.

It can readily be seen that these things are not at all essential to the establishment of an efficient Department or Bureau of Public Health. It would be entirely practicable to take the existing United States Public Health and Marine Hospital Service as a nucleus and by giving it more money and greater power where needed enlarge it into an organization which would meet all the needs of the public health, without disturbing other branches of the government service.

The feature of the plan which most concerns this association is the proposal to transfer all or a part of the work of the Bureau of Animal Industry to a Department or Bureau of Public Health. The Bureau of Animal Industry deals with the live stock interests and is largely a veterinary organization. Aside from its veterinary work, it covers such subjects as the breeding and feeding of live stock, also dairy practice and methods, including the manufacture of cheese, butter, etc. Surely work of this kind has no place in a Department of Public Health, and the proposal to transfer the entire Bureau of Animal Industry indicates that the advocates of such a measure have no adequate conception of the scope of the work actually carried on by the Bureau.

The Bureau of Animal Industry is essentially an agricultural organization and deals primarily with agriculture, and its logical place is in the Department of Agriculture, even though some branches of its work have an important bearing on the public health. Even in the portions of the bureau's work of which the protection of human health is an important object, the problems are mainly agricultural and must be attacked from that side.

The production and conservation of the public food supply are of the highest importance to human health, but the measures

by which such production and conservation are accomplished are mainly agricultural. In other words, while the *end* is a matter of public health, the *means* of accomplishing that end constitute an agricultural problem; and the Department of Agriculture is certainly the most appropriate agency for carrying out such agricultural means. To maintain an adequate supply of food-producing animals to meet the needs of our people, not only must methods of breeding and feeding live stock be studied and applied, but diseases of animals must be studied and combated; and all this work is an integral part of one great problem and should not be separated.

Advocates of the Health Department often point to the large amounts expended by the government for the protection of the health of live stock, and contrast this with the small appropriations for the health of the people. It is said that the government should do as much for the babies as it does for the hogs. Such arguments are fallacious and misleading. The money appropriated by Congress for the work of the Bureau of Animal Industry is not appropriated because of any sentimental feeling for the welfare of the animals themselves, but the real object is to provide a sufficient and wholesome supply of food for the preservation of human life and health.

There are strong administrative and economical reasons why the work of the Bureau of Animal Industry should remain intact and in the Department of Agriculture. It is erroneous to argue that the consolidation of the various government agencies having a bearing in any way on the public health into one department would be an economy. If this bureau were removed from the Department of Agriculture it would be necessary for that department to replace a large part of the organization, if it continued to deal efficiently with agriculture, and this would duplicate expense. The present organization permits the use of the same men (under various appropriations) in different lines of work, and their transfer from time to time to meet the needs of the service. For example, in the emergency caused by the outbreak of contagious foot-and-mouth disease in the winter of 1908 it was possible to draw immediately on a trained force of veterinarians and scientists already engaged in the meat inspection and other regular work of the Bureau. Had the work been organized differently this would have been impracticable or impossible, and while a force was being organized, the contagion would very probably have spread widely and reached the great

stock raising regions of the West, where it would have caused tremendous damage and loss and where its eradication would have been exceedingly difficult and expensive. The regular field work in eradicating diseases of animals is mostly done during the summer, while the work of slaughter houses is heaviest during the winter; and a number of men can be utilized for field work in the summer and for meat inspection in the winter, thus effecting an economy which would not be possible if these lines of work were not under the same management.

Work such as the meat inspection and that dealing with diseases of animals should not only be performed by veterinarians, but should remain under their control and direction. The transfer of this work or any part of it to the proposed Department or Bureau of Public Health would result in placing veterinary work under the direction of members of the medical profession, and would consequently subordinate the veterinary work to that relating to human medicine. Such a change in my judgment would not only greatly impair the efficiency of the work, but would be distasteful to members of the veterinary profession. A physician, no matter how capable, is not qualified, without proper veterinary training, to conduct or direct such work as the meat inspection or the investigation and eradication of animal diseases. The government's veterinary work should by all means remain under veterinary direction, even if regarded solely from the standpoint of efficiency without any regard to professional pride.

Let us keep these matters in mind and try to maintain one branch of the government which is principally one of veterinary science, for a change may mean much not only to the profession of to-day, but for all time. Since we last met a number of our associates have crossed the Great Divide, as we must all do. We stop to pay our last respects, then the ranks close up and on we march, for such is life, and such is death. A convention such as this has many pleasant associations and beneficial influences. It broadens the view, and cultivates a spirit of fraternity and good fellowship. We come together to consider things affecting the welfare and progress of our profession, and take action to promote these objects. The papers, reports and clinics are instructive and valuable. For many a busy man it is a vacation, a time of relaxation from work, an occasion for renewing old acquaintances and forming new ones. It is a time of instruction and enjoyment. Let us make the most of it in every way.

THE ATTENDANCE.

Members.

CALIFORNIA—Geo. H. Locke, Carl W. Fisher, Wm. F. Egan, C. M. Haring, W. M. McKellar, W. E. D. Morrison, H. H. Hicks, H. E. Torgersen, M. Rosenberger, P. H. Browning, J. A. Grau, David F. Fox, H. J. Hammond, C. E. Price, F. H. McNair, C. B. Roadhouse, J. H. Webster, R. A. Archibald, A. V. Hall, H. W. Rike, Chas. Keane, Clarence Loveberry, Charles Eastman, J. J. Summerfield.

CONNECTICUT—Richard P. Lyman.

CANADA—J. A. Stevenson, H. Higgins, E. A. A. Grange, C. D. McGilvary, J. G. Rutherford.

COLORADO—B. F. Kaupp, Geo. H. Glover, Charles G. Lamb, A. J. Savage.

DISTRICT OF COLUMBIA—A. D. Melvin, John R. Mohler.

ILLINOIS—James Robertson, L. A. Merillat, Joseph Hughes, John F. Ryan, Herbert F. Palmer, O. E. Dyson.

INDIANA—G. H. Roberts, W. B. Craig, J. C. Rodger.

IDAHO—F. W. Chamberlain, G. E. Noble.

IOWA—G. A. Johnson, Paul O. Koto, W. W. Dimock.

KANSAS—F. S. Schoenleber, Alex. Plummer.

MINNESOTA—F. A. Ilstrup, M. H. Reynolds.

MISSOURI—F. F. Brown, S. Stewart, A. T. Kinsley, B. W. Murphy, Wm. Locke.

MONTANA—W. J. Taylor.

MICHIGAN—S. Brenton, J. S. Donald.

MASSACHUSETTS—J. F. Winchester, Francis Abele, Jr.

MARYLAND—William Dougherty.

NEBRASKA—W. K. O'Neal, J. L. Hoylman, P. Juckniess.

NEW YORK—Otto Faust, J. L. Robertson, W. H. Kelly, R. W. Ellis, P. A. Fish.

NEVADA—W. B. Mack, J. O. Jacobs.

OHIO—A. S. Cooley, E. H. Shepard, N. C. Hillock, J. H. Blattenberg.

OREGON—H. Nunn, W. D. Wright.

PENNSYLVANIA—S. E. Weber, C. J. Marshall, F. H. Schneider, Otto G. Noack, W. Horace Hoskins.

SOUTH DAKOTA—H. O. Moore.

TENNESSEE—Geo. R. White.

WASHINGTON—C. H. Schultz, W. E. Robertson, E. D. Kennedy, S. B. Nelson.

WISCONSIN—D. B. Clark, H. F. Eckert,

Visitors.

CALIFORNIA—Mr. F. L. Clark, Prof. W. B. Hermis, Dr. G. H. Eickhoff, Dr. A. L. Metz, Mr. P. S. Holden, Mr. A. F. Jacobs, Dr. L. E. Tuttle, Dr. Thomas E. Carroll, Mr. Herbert Struthers, Mr. C. H. Bradley, Mr. Sterling Price, Mr. C. M. Turning, Mr. J. A. Dell, Dr. C. F. Edwards, Mr. C. W. Hobbs, Mr. W. E. Noble, Mr. R. K. Wright, Mr. Clyde O. Napier, Mr. Harold Carpenter, Mr. I. G. Cockroft, Mr. L. A. McAfee, Dr. C. C. Walker, Mr. Thomas R. Creely, Mr. Ira Dalziel, Mr. Baker Browning, Mr. Barclay Ricks, Mr. J. A. Woodside, Dr. T. O. Anders, Mr. B. H. Priest, Mr. J. E. Quinn, Dr. A. S. Williams, Mr. H. C. Johnson, Dr. H. Bergh, Dr. Thomas Rundel, Mr. E. R. McCullough, Dr. A. F. Eagle, Mr. Fred Goldager, Dr. Chas. Struthers, Mr. J. A. Lepley, Dr. F. N. Sawyer, Dr. F. Segsworth, Dr. M. J. O'Rourke, Dr. G. Edwards Metthews, Dr. C. A. Raque, Dr. L. A. Danielson, Dr. Geo. J. Donnelly, Dr. Oscar J. Kron, Dr. A. C. Rosenberger, Dr. C. Sears, Dr. Geo. R. Ward, Dr. Geo. Gordon, Dr. J. A. Hill, Dr. A. P. Jacobs, Dr. M. L. Pattison, Dr. Otis A. Longley, Dr. C. O. Durfee, Dr. R. T. Whittlesey, Dr. W. A. Boucher, Dr. Frank Griffith, Dr. Geo. S. Baker, Mr. K. F. Gittings, Dr. G. W. Closson, Dr. A. D. Hubbell, Dr. J. A. DeSerpa, Dr. C. B. Outhier, Dr. E. J. Creely, Dr. J. P. Iverson, Dr. Geo. S. Rey, Dr. J. F. Ast, Dr. H. W. C. Lehlenwalter, Dr. William McPhillips, Dr. J. O. Dell, Dr. W. J. Caldwell, Dr. G. F. Faulkner, Dr. E. J. Fallon, Dr. C. L. Megowan, Dr. J. P. O'Connor, Dr. R. B. Corcoran, Dr. A. R. Sorensen, Dr. J. J. Hogarty, Dr. M. J. Brady, Dr. L. C. Hoffman, Dr. L. M. Steckel, Dr. W. W. Thomas, Mr. S. J. Platt, Dr. T. B. Howard, Dr. F. W. Orme, Dr. C. A. Dukes, Dr. L. A. Covel, Mr. J. N. Patterson, Dr. Tom Carpenter, Dr. H. A. Turner, Dr. E. G. Smart, Dr. H. D. Fenimore, Dr. H. A. Spencer, Hon. Julius Kahn, Dr. James Boyd, Dr. R. M. Olsen-Seffer, Dr. C. F. McCarthy, Dr. Norman Neilson, Mr. H. E. Allen, Dr. H. R. Jackson, Dr. J. B. Boomer, Dr. W. B. Childs, Mr. R. S. Eastman, Dr. Ward B. Rowland, Dr. P. W. Goodwin, Dr. A. C. Brown, Dr. E. B. Cockerton, Dr. John F. Force.

BRITISH COLUMBIA—Dr. Thomas Bowhill.

COLORADO—Dr. L. L. Glynn.

CONNECTICUT—Mr. Chas. F. Roberts.

WASHINGTON, D. C.—Mr. William M. Mohler.

ILLINOIS—Dr. C. P. Shaughnessy, Dr. F. W. Christiansen.

IOWA—Mr. L. F. Potter.

KANSAS—Dr. Andrew S. Donovan.
MINNESOTA—Mr. Harry Evenson.
MISSOURI—Dr. C. M. Scott, Mr. A. S. Kinsley.
MICHIGAN—Mr. John Zieg.
MASSACHUSETTS—Dr. M. F. Sullivan.
NEW YORK—Mr. W. H. Kelly, Jr., Dr. C. C. Oderkick, Col. William F. Kirchner, Dr. Robert S. MacKellar, Dr. Wm. J. McKinney.
NEW ZEALAND—Dr. F. J. Quick.
NEW JERSEY—Dr. W. Runge.
NEVADA—Dr. B. G. Dill, Dr. T. F. Richardson.
OHIO—Dr. Jerome Orr.
OREGON—Dr. W. H. Lytle, Dr. S. J. Carney, Dr. A. G. Smith, Mr. Harry Nunn, Dr. J. Sullivan, Dr. A. C. Johnson.
PENNSYLVANIA—Mr. H. B. Brooks, Dr. John C. Foelker.
UTAH—Dr. John H. Halton.
WASHINGTON—Dr. A. W. Small, Dr. S. T. Miller, Mr. Russell T. Miller, Dr. J. T. Seely.
WISCONSIN—Mr. W. F. Eckert.

Ladies.

CALIFORNIA—Mrs. J. F. Ast, Mrs. H. W. Rike, Mrs. C. B. Outhier, Mrs. G. S. Baker, Mrs. F. M Sawyer, Mrs. W. McPhillips, Mrs. G. S. Rey, Mrs. Walter Lillick, Mrs. Ed. J. Creely, Mrs. L. A. Tuttle, Mrs. R. F. Gittings, Mrs. C. F. McCarthy, Mrs. E. A. Haring, Mrs. C. M. Haring, Mrs. G. W. Closson, Miss L. A. Savage, Mrs. Annie Griffith, Mrs. A. D. Hubbell, Mrs. G. R. Ward, Mrs. A. C. Brown, Mrs. C. H. Chase, Mrs. H. M. Lightener, Mrs. F. Fisher, Mrs. J. J. Hogarty, Mrs. R. A. Archibald, Miss Agnes Bell, Mrs. L. A. Covel, Mrs. C. W. Fisher, Miss Marie Rike, Miss Violet Lincoln, Mrs. T. W. Orme, Mrs. R. T. Whittlesey, Mrs. F. H. McNair, Mrs. S. J. Platt, Mrs. C. O. Butter, Mrs. Julius Kahn, Miss Hill, Mrs. W. A. Boucher, Mrs. Ward B. Rowland, Mrs. Otis A. Longley, Miss Gwendolyn Carpenter, Mrs. David F. Fox, Miss Ruth Moore, Miss Ethel V. Hogarty, Miss Jessie V. Berry, Mrs. Tom Carpenter, Mrs. G. Edwards Metthews, Mrs. L. A. Danielson, Mrs. Geo. J. Donnelly, Mrs. A. V. Hall, Mrs. Pancoast, Mrs. C. Sears, Mrs. A. P. Jacobs, Miss Howard, Mrs. P. H. Browning, Dr. P. S. Nusbaumer, Mrs. Charles Keane, Mrs. H. R. Jackson, Mrs. H. A. Spencer, Mrs. C. A. Dukes, Mrs. G. H. Beardsley, Mrs. C. E. Price, Miss Hazel Dell, Mrs. Chas Eastman.

CANADA—Miss Mary Stewart, Miss Annie Ryan.
COLORADO—Mrs. Geo. H. Glover, Mrs. B. F. Kaupp, Miss Madalin Kaupp.
CONNECTICUT—Mrs. Richard P. Lyman.
DISTRICT OF COLUMBIA—Mrs. John R. Mohler, Miss Miriam C. Mohler.
ILLINOIS—Mrs. James Robertson, Mrs. A. B. Ryan.
INDIANA—Mrs. Taylor.
IDAHO—Mrs. F. W. Chamberlain, Mrs. G. E. Noble.
IOWA—Mrs. G. A. Johnson.
KANSAS—Mrs. A. Plummer, Mrs. F. S. Schoenleber.
MINNESOTA—Mrs. F. A. Ilstrup.
MISSOURI—Mrs. F. F. Brown, Mrs. A. T. Kinsley, Mrs. J. H. Moser, Mrs. B. W. Murphy, Mrs. C. N. Scott, Mrs. S. Stewart,
MONTANA—Mrs. W. J. Taylor.
MICHIGAN—Mrs. S. Brenton, Mrs. J. S. Donald.
MASSACHUSETTS—Mrs. Francis Abele.
NEBRASKA—Mrs. J. L. Hoylman.
NEW YORK—Miss C. H. Faust, Mrs. R. W. Ellis, Mrs. J. H. Hickok.
NEVADA—Mrs. T. F. Richardson.
NEW ZEALAND—Mrs. F. J. Quick.
OHIO—Mrs. A. S. Cooley, Mrs. E. H. Shepard.
OREGON—Mrs. S. J. Carney, Mrs. A. C. Johnson.
PENNSYLVANIA—Mrs. C. J. Marshall, Mrs. W. H. Hoskins, Mrs. F. H. Schneider, Mrs. O. G. Noack, Mrs. H. B. Brooks.
TENNESSEE—Mrs. Geo. R. White.
UTAH—Mrs. J. H. Halton.
WASHINGTON—Mrs. A. W. Small, Mrs. S. B. Nelson, Mrs. J. T. Seely, Mrs. S. T. Miller.
WISCONSIN—Mrs. W. F. Eckert, Mrs. H. F. Eckert, Mrs. D. B. Clark.

NEW MEMBERS.

As a result of several sittings of the Executive Committee during the convention, 191 new names were recommended for election to membership and 5 for reinstatement; the final result being 196 names added to the roll of active members in the association as follows:

Allen, Rollin M., M.D.C., Rapid City, S. D. (Iowa State College, Chicago Veterinary College, 1903); Anders, Thomas O.,

D.V.M., Fresno, Cal. (Ohio State University, Vet. Department, 1903); Arnold, John W., M.D.V., Riverside, Cal. (McKillip Veterinary College, 1908); Babb, Geo. F., D.V.S., Topeka, Kan. (Kansas City Veterinary College, 1910); Baker, Eustace T., D.V.M., Spokane, Wash. (Ohio State University, 1909); Baker, George S., V.S., Berkeley, Cal. (Montreal, 1887); Baker, Horace Morgan, V.M.D., Sydney, N. S. W., Australia (Veterinary Department, University of Pennsylvania, 1908); Begeman, Philip F., D.V.M., Sanborn, Ind. (Indiana Veterinary College, 1908); Best, William Robt. Llewllyn, V.S., Manila, P. I. (Ontario Veterinary College, 1895); Bine, Henry E., D.V.S., Carrizozo, N. M. (Kansas City Veterinary College, 1908); Blackstock, Moore R., D.V.S., Gunnison, Col. (Colorado Agricultural College, Vet. Department, 1910); Boucher, W. A., Pasadena, Cal. (Ontario Veterinary College, 1901); Brenton, Willis L., V.S., Detroit, Mich (Ontario Veterinary College, 1903); Brossard, George J., V.S., Ashland, Wis. (Ontario Veterinary College, 1895); Brown, Arthur C., D.V.S., San Francisco, Cal. (Washington State College, 1908); Brown, Herbert Austen, M.D.C., Victoria, B. C. (Chicago Veterinary College, 1908); Burns, John Robert, D.V.M., Manila, P. I. (New York State Veterinary College, 1907); Carroll, Thomas E., D.V.S., Chico, Cal. (University of California, Vet. Department, 1899); Carstenson, Lawrence P., D.V.S., Columbus, Neb. (Kansas City Veterinary College, 1907); Cleveland, Walter J., D.V.M., Hornet, Neb. (Iowa State College, 1910); Cline, Jesse D., D.V.M., York, Neb. (Iowa State College, 1910); Close, Frank W., D.V.S., Spokane, Wash. (Washington State College, 1907); Closson, Gardner W., D.V.S., Anakeim, Cal. (Kansas City Veterinary College, 1905); Creech, G. Tinsley, D.V.S., Roswell, N. M. (Kansas City Veterinary College, 1910); Curry, Joseph Michael, V.S., B.V.Sc., Hartford, Conn. (Veterinary Department, Toronto University, 1910); Curtis, Wilbert A., D.V.S., San Fernando Pampanga, P. I. (Kansas City Veterinary College, 1909); Danielson, Leopold A., V.S., Madera, Cal. (New York College of Veterinary Surgeons, 1895); Davenport, Miles Leroy, D.V.M., Fergus Falls, Minn. (New York-American Veterinary College, 1903); Dawdy, Clarence A., M.D.C., Brawley, Cal. (Chicago Veterinary College, 1903); Dell, Jesse Applin, V.S., Los Angeles, Cal. (Ontario Veterinary College, 1881); Deming, Charles W., D.V.M., Spokane, Wash. (Iowa State College, 1900); DeSupa, John Alexander, D.V.S.,

Salinas, Cal. (San Francisco Veterinary College, 1910); Dickey, George W., V.S., Colorado Springs, Col. (Ontario Veterinary College, 1886); Dill, Bennie G., D.V.S., Reno, Nev. (Kansas City Veterinary College, 1908); Dillon, L. Ray, M.D.C., Portland Ore. (Chicago Veterinary College, 1906); Doak, Hugh T., D.V.S., Los Angeles, Cal. (Kansas City Veterinary College, 1905); Douglass, Frank J., V.M.D., New Orleans, La. (Indiana Veterinary College, 1906); Dreher, William Henry, M.D.C., Oregon, Wis. (Chicago Veterinary College, 1907); Durfee, Clarence A., V.S., San Luis Obispo, Cal. (New York College Veterinary Surgeons, 1895); Eagle, Alexander F., D.V.S., San Francisco, Cal. (Kansas City Veterinary College, 1906); Eisenhower, Elmer C., D.V.S., Gypsum, Kan. (Kansas City Veterinary College, 1910); Eisenhower, James M., D.V.S., Schell City, Mo. (Kansas City Veterinary College, 1910); Eliason, Oscar H., V.S., Omro, Wis. (Ontario Veterinary College, 1901); Ettling, Christian C., D.V.S., E. Las Vegas, N. M. (Kansas City Veterinary College, 1908); Farley, Abraham Jackson, A.B., D.V.S., Los Angeles, Cal. (Kansas City Veterinary College, 1904); Fleming, William B., Casper, Wyo. (American Veterinary College, 1894); Folse, Charles D., Marshall, Texas (Kansas City Veterinary College, 1910); Forge, Louis A., M.D.C., Burlington, Wis. (Chicago Veterinary College, 1903); Frank, John Williamson, V.S., Nelson, B. C. (Ontario Veterinary College, 1904); French, Alexander W., Laramie, Wyo. (Kansas City Veterinary College, 1909); French, William Harold, M.D.C., Redfield, S. D. (Chicago Veterinary College, 1909); Frey, Charles Thomas, River Point, R. I. (Ontario Veterinary College, 1899); Gearhart, Frank C., D.V.M., Iowa State College, 1907); Gilchrist, Wm. T., V.S., Norfolk, Va. (Ontario Veterinary College, 1888); Glynn, Lawrence R., D.V.S., Monte Vista, Col. (New York-American Veterinary College, 1908); Goodwin, Percy Walker, M.D.C., Newman, Cal. (Chicago Veterinary College, 1910); Gray, Frederick Sumner, M.D.C., Big Timber, Mont. (Chicago Veterinary College, 1909); Gress, John L., D.V.S., Manila, P. I. (Kansas City Veterinary College, 1908); Grove, John S., V.S., Kansas City, Kan. (Ontario Veterinary College, 1892); Haggard, E. W., V.S., Portland, Ore. (Ontario Veterinary College, 1888); Hallquist, Ralph August, D.V.S., Minneapolis, Minn. (Kansas City Veterinary College, 1909); Hammond, Harry James, D.V.M., Sacramento, Cal. (Ohio State University, Vet.

College, 1900); Handley, John M., Union Stock Yards, Chicago, Ill. (Ohio State University, 1908); Harmon, Arthur Atwell, V.M.D., Flagstaff, Ariz. (Veterinary Department, University of Pennsylvania, 1902); Harrison, James, V.S., Dalhart, Texas (Ontario Veterinary College, 1890); Hart, George H., V.M.D., Los Angeles, Cal. (University of Pennsylvania, 1903); Hartman, Thos. T., D.V.S., Manila, P.I. (Kansas City Veterinary College, 1909); Hatterscheid, Charles Albert, M.D.C., Aberdeen, S. D. (Chicago Veterinary College, 1903); Hay, Leopold, V.S., Faribault, Minn. (Ontario Veterinary College, 1896); Heacock, Clyde C., V.S., Chama, N. M. (Ohio Veterinary College, 1903); Hecker, Frank, M.D.C., Camden, Tenn. (Chicago Veterinary College, 1906); Hedrick, Horace A., D.V.S., Baltimore, Md. (American Veterinary College, 1892); Heminy, Christian D., V.S., New London, Wis. (Ontaria Veterinary College, 1894); Herring, Lawrence James, D.V.S., Experiment, Ga. (Kansas City Veterinary College, 1909); Hess, Orlando B., D.V.S., Seattle, Wash. (National Veterinary College, 1894); Hicks, Hazen H., M.D.V., Sacramento, Cal. (Harvard University, 1889); Hill, Anson Harris, D.V.S., Brookings, S. D. (Kansas City Veterinary College, 1909); Hill, James, M.D.C., Tarlac Tarlac, P. I. (Chicago Veterinary College, 1900); Hill, James Anderson, M.D.C., Alameda, Cal. (Chicago Veterinary College, 1906); Hill, William Proctor, V.S., Fort Wm. McKinley, Regal, P. I. (Ontario Veterinary College, 1895); Hoskins, H. Preston, V.M.D., Philadelphia, Pa. (University of Pennsylvania, Veterinary Department, 1910); Howard, Julian, D.V.S., Spokane, Wash. (Washington State Veterinary College, 1909); Howard, William K., M.D.C., Manila, P. I. (Chicago Veterinary College, 1907); Hubbell, A. D., Los Angeles, Cal. (Chicago Veterinary College, 1906); Hudgins, Patrick Henry, V.S., B.V.Sc., Fredericksburg, Va. (Ontario Veterinary College, 1910); Humphrey, E. H., M.D.V., Santa Maria, Cal. (McKillip Veterinary College, 1905); Humphreys, John C., D.V.S., Laredo, Mo. (Kansas City Veterinary College, 1910); Hurst, Dan. W., D.V.M., Rapid City, S. D. (Iowa State College, 1908); Hurst, Wilbur H., D.V.M., Chadron, Neb. (Iowa State College, 1902); Husband, Aubrey G., M.D.V., V.S. (Ontario Veterinary College and McKillip, Ohio, 1906-07; Hylton, F. D., D.V.S., Las Animas, Col. (Veterinary Department, Colorado Agricultural College, 1910); Innes, Marion, D.V.M., Albuquerque, N. M. (Ohio State Uni-

versity, 1901); Jeffries, Joseph Richardson, V.M.D., Fort Riley, Kan. (University of Pennsylvania, 1893); Kalkus, Julius Wilbur, D.V.S., Pullman, Wash. (Kansas City Veterinary College, 1909); Kelpe, Henry O., D.V.S., Roswell, N. M. (Kansas City Veterinary College, 1909); Kingman, Harry Woodbridge, M.D.V., Boston, Mass. (McKillip Veterinary College, 1909); Kinsley, Christopher C., D.V.S., Oakley, Kan. (Kansas City Veterinary College, 1905); Kliphardt, Wm. A., D.V.S., Manila, P. I. (Kansas City Veterinary College, 1909); Knight, Ralph F., D.V.M., Machias, N. Y. (Cornell University, 1907); Korb Walter A., D.V.S., Tagbilaran Bohol, P. I. (Kansas City Veterinary College, 1908); Kragniss, Theodore Andrew, Chicago, Ill. (McKillip Veterinary College, 1901); Kron, Oscar Jacob, San Francisco, Cal. (New York-American Veterinary College, 1907); Lawton, Andrew N., Brodhead, Wis. (Ontario Veterinary College, 1905); Le Claire, Thomas E., D.V.S., High River, Alberta (Laval University, Montreal, 1890); Leslie, Charles Adelphus, V.S., Deadwood, S. D. (Ontario Veterinary College, 1903); Lichtenwalter, Harry W. C., V.S., San Francisco, Cal. (Ohio State University, 1908); Lipp, George A., V.S., Roswell, N. M. (Ohio State University, 1904); Love, James R., D.V.M., Lockwood, Ohio (Ohio State University, 1907); Low, Edward, Sacramento, Cal. (McKillip Veterinary College, 1908); Lytle, William Harrison, D.V.M., Pendleton, Ore. (Veterinary Department, Iowa State College, 1902); McCarthy, Thomas A., D.V.M., Santa Fe, N. M. (New York State Veterinary College, 1906); McClain, L. Gordon, D.V.S., Lamar, Col. (Colorado Agricultural College, 1910); McCullough, M.D.C., Delavan, Wis. (Chicago Veterinary College, 1894); McDowell, Clarence, V.S., Watertown, S. D. (Ontario Veterinary College, 1904); McHenry, Walter, V.M.D., Waterloo, Iowa (University of Pennsylvania, 1908); McKeon, William Joseph, M.D.C., Victoria, B. C. (Chicago Veterinary College, 1910); McKibbin, David, Jr., V.M.D., Baguio Benguet, P. I. (University of Pennsylvania, 1906); McKinney, William J., V.S., Brooklyn, N. Y. (New York College of Veterinary Surgeons, 1889); McKinnon, John Alexander, V.S., Manila, P. I. (Ontario Veterinary College, 1897); McMullin, Robert H., M.D.C., Denver, Col. (Chicago Veterinary College, 1892); MacKellar, Robt. S., V.S., New York City (New York College of Veterinary Surgeons, 1894); Marquardt, Samuel Jacob, D.V.M., Ft. Wayne, Ind. (Ohio State University, Vet. Dept., 1904); Mebane, William

Long, V.M.D., St. Albans, Me. (University of Pennsylvania, Veterinary Department, 1908); Megouay, Claude L., V.S., Sacramento, Cal. (Ontario Veterinary College, 1895); Meyerhoeffer, Jos. Stewart, V.S., North River, Va. (Ohio State University, 1910); Moore, Sheard, V.S., Donaldsonville, La. (Ontario Veterinary College, 1896); Nance, Joseph E., D.V.S., Iloilo, P. I. (Kansas City Veterinary College, 1907); Naylor, Ralph Edelen, D.V.S., Chadron, Neb. (Kansas City Veterinary College, 1907); Newberg, Louis, D.V.S., Kansas City, Mo. (Kansas City Veterinary College, 1910); O'Banion, Archie L., D.V.M., Santa Barbara, Cal. (Iowa State College, 1907); O'Brien, Patrick Jos., M.R.C.V.S., Los Angeles, Cal. (Royal Veterinary College, London, 1907); O'Donnell, Michael J., M.D.V., Blue Island, Ill. (McKillip Veterinary College, 1900); O'Reilley, James M., M.D.C., Merrill, Wis. (Chicago Veterinary College, 1898); Oliver, Walter Gordon, M.D.V., San Diego, Cal. (McKillip Veterinary College, 1908); Orme, Frank W., M.D.V., San Francis, Cal. (McKillip Veterinary College, 1908); Orme, Thomas Whitfield, V.S., San Bernardino, Cal. (Ontario Veterinary College, 1893); Palmer, Floyd Elbert, M.D.C., Alexandria, Minn. (Chicago Veterinary College, 1910); Paxton, Irving B., D.V.M., Red Bluff, Cal. (State College of Iowa, 1905); Peck, Sanford Artisan, D.V.S., Oak Grove, Mo. (Kansas City Veterinary College, 1904); Perry, James G., D.V.S., Carrizozo, N. M. (Kansas City Veterinary College, 1909); Pfarr, Albert William, V.S., B.V.Sc., Pittsburgh, Pa. (Ontario Veterinary College, 1908-1910); Pike, Frederick, V.S., Spokane, Wash. (Ontario Veterinary College, 1886); Pollard, John Samuel, V.S., Providence, R. I. (Ontario Veterinary College, 1898); Purcell, John T., Rapid City, S. D. (McKillip Veterinary College, 1907); Prien, Roland H., M.D.V., Laramie, Wyo. (McKillip Veterinary College, 1910); Priest, Benjamin H., M.D.C., Kern City, Cal. (Chicago Veterinary College, 1907); Pritchard, William T., D.V.S., North Platte, Neb. (Kansas City Veterinary College, 1907); Quin, Abner H., V.S., Creston, Iowa (Ontario Veterinary College, 1888); Quinn, Thomas F., V.S., M.D.C., Greeley, Col. (Chicago Veterinary College, 1904); Raque, Charles A., D.V.S., San Luis Obispo, Cal. (American Veterinary College, 1893); Reardon, John D., M.D.V., Manila, P. I. (McKillip Veterinary College. 1909); Revercomb, George A., D.V.S., Clifton Forge, Va. (Kansas City Veterinary College, 1905); Richardson, T.

Francis, B.S., D.V.S., Lallon, Nev. (Washington State College, 1907); Reitz, J. H., D.V.M., Denver, Col. (Ohio State University, 1903); Rishel, Albert E., M.D.C., Hollywood, Cal. (Chicago Veterinary College, 1889); Roach, Frank, Pendleton, Ore. (San Francisco Veterinary College, 1910); Robinson, Beale, A., V.S., Independence, Kan. (Ontario Veterinary College, 1900); Rosenberger, Arthur C., D.V.S., Sacramento, Cal. (Washington State College, 1908); Royer, Bertsch, V.S., Shawano, Wis. (Ontario Veterinary College, 1898); Runge, Werner, Newark, N. J. (Certificate Royal Veterinary School of Berlin, Germany, 1879); Savage, Willard A., M.D.C., Tucumcari, N. M. (Chicago Veterinary College, 1895); Sayre, B. H., South Omaha, Neb. (Kansas City Veterinary College, 1908); Seely, James Taintor, M.D.C., Seattle, Wash. (Chicago Veterinary College, 1908); Shaffer, Dallas W., M.D.V., New Castle, Pa. (McKillip Veterinary College, 1909); Shipley, Trajan A., M.D.C., St. Joseph, Mo. (Chicago Veterinary College, 1890); Smith, Stanley, V.S., Columbia, Mo. (New York College of Veterinary Surgeons, 1892); Snyder, Rudolph, M.D.C., Lamar, Col. (Chicago Veterinary College, 1903); Sorensen, Andreas Iversen, V.S., Modesto, Cal. (Ontario Veterinary College, 1898); Sorrell, Warren, D.V.S., Willard, N. M. (Kansas City Veterinary College, 1907); Spenser, H. H., M.D.C., Jacksonville, Fla. (Chicago Veterinary College, 1906); Springer, Samuel E., V.S., Denver, Col. (Ohio State Veterinary College, 1904); Stiner, Javan O., D.V.S., Cedarville, Cal. (Kansas City Veterinary College, 1910); Streets, John James, D.V.S., Ventura, Cal. (American Veterinary College, 1888); Stults, Clinton L., D.V.S., Tucumcari, N. M. (Kansas City Veterinary College, 1907); Sullivan, James, V.S., Portland, Ore. (Ontario Veterinary College, 1887); Thompson, John S., V.S., Moscow, Idaho (Ontario Veterinary College, 1892); Thompson, Warwick Morrill, Red Bluff, Cal. (Ontario Veterinary College, 1872); Thomson, Charles Goff, D.V.M., Manila, P. I. (New York State Veterinary College, 1907); Tooley, James W., V.S., Fon du Lac, Wis. (Ontario Veterinary College, 1896); Turner, H. A., Pleasantine, Cal. (Ontario Veterinary College, 1804); Van Eenenaam, John, M.D.V., Salem, S. D. (McKillip Veterinary College, 1909); Walsh, Charles I., D.V.S., St. Joseph, Mo. (Kansas City Veterinary College, 1908); Walters, Percy Knight, V.S., Okotoks, Alberta, Canada (Ontario Veterinary College, 1905); White, Stephen Alban Keen, V.S., Vancouver, B. C.

(Ontario Veterinary College, 1900); Wiley, Morris C., D.V.S., Albuquerque, N. M. (McGill University, Veterinary Department, 1893); Wilson, Fred O., V.S., Green Bay, Wis. (Ontario Veterinary College, 1895); Wilson, J. Oscar, D.V.M., Pendleton, Ore. (Ohio State University, 1908); Wipf, J. D. C., M.D.V., Belgrade, Mont. (McKillip Veterinary College, 1909); Wurm, John E., V.S., Pigeon, Mich. (Ontario Veterinary College, 1902); Youngberg, Stanton, D.V.M., Manila, P. I. (Veterinary Department, Ohio State University, 1907).

REINSTATED.

Faville, Geo. C., D.V.M., Norfolk, Va. (Iowa State College, 1880); Flower, E. Pegram, D.V.S., Baton Rouge, La. (United States College of Veterinary Surgeons, 1899); Sawyer, Frank N., M.D.C., Bakersfield, Cal. (Chicago Veterinary College, 1893); Spencer H. Francis, D.V.S., Santa Barbara, Cal. (Chicago Veterinary College, 1891); Stevenson, James Alston, V.S., Gretna, Manitoba, Canada (Ontario Veterinary College, 1894).

HONOR ROLL.

The following names were added to the honor roll: W. G. Hollingworth, J. W. Scheibler and W. L. Williams.

CABLEGRAMS.

"Paris, September 6, 1910.

"President, Veterinary Association, Palace Hotel, San Francisco.

"Always with you. Friendly greetings. Best wishes.

"LIAUTARD."

A telegram expressing regret at his inability to be present, and wishing the association a successful meeting, was received from ex-President Dalrymple, Baton Rouge, La.

SECRETARY'S REPORT.

As Secretary Lyman's report will appear in detail in the published proceedings of the Association, we will not use the much-needed space to reproduce it here; but desire to compliment that

efficient retiring officer on its completeness, although presented in so concise a form, a feature which has characterized the Doctor's work during his several years' service to the Association.

TREASURER'S REPORT.

RECEIPTS FOR 1909-10.

1909.	
September 11—Balance in bank at last report	$2,033 09
1910.	
January 29—Received from R. P. Lyman, Secretary	1,200 00
June 10—Received from R. P. Lyman, Secretary	500 00
July 20—Received from R. P. Lyman, Secretary	500 00
August 21—Received from R. P. Lyman, Secretary	2,001 37
Total receipts	$ 6,234 46

DISBURSEMENTS FOR 1909-10.

1909.	
September 25—To R. P. Lyman, Kansas City, Mo., for salary and expenses at Chicago meeting	$ 604 28
September 25—To J. B. Lippincott Co., Philadelphia, Pa., for balance of bill ordered paid by Executive Committee	100 00
September 25—To Wm. Henry Kelley, Albany, N. Y., for expenses as Resident State Secretary	26 75
September 25—To B. T. Woodward, Washington, D. C., for expenses as Resident Secretary	1 08
September 25—To Charles A. McKim, Norfolk, Neb., for expenses as Resident Secretary	5 50
September 25—To C. H. Jewell, Fort Riley, Kansas, for expenses as Resident Secretary	55
September 25—To J. W. Parker, El Paso, Texas, for expenses as Resident Secretary	4 55
September 25—To J. F. Mack, River Falls, Wis., for expenses as Resident Secretary	9 96
September 25—To J. P. Foster, Huron, S. D., for expenses as Resident Secretary	4 00
September 25—To W. Dean Wright, Portland, Oregon, for expenses as Resident Secretary	90
September 25—To A. T. Kinsley, Kansas City, Mo., for expenses as Acting Resident Secretary	2 00
September 25—To M. F. Leffingwell, Austin, Minn., for expenses as Resident Secretary	4 00
September 25—To W. H. Dalrymple, Baton Rouge, La., for express on Certificates from Philadelphia	35
September 25—To Homer Miller, Paragon, Ind., for membership fees returned (application withdrawn)	8 00
September 25—To R. R. Hammond, Cheroke, Ia., for expenses as Resident Secretary	8 45
September 25—To Wm. Herbert Lowe, Paterson, N. J., for telegram to W. H. Dalrymple	60

September 25—To Thomas Thacker, Renfrew, Ont., for expenses as Resident Secretary	8 63
September 25—To Geo. R. White, Nashville, Tenn., for expenses as Treasurer to September 1, 1909	4 50
October 22—To The Case, Lockwood & Brainard Co., Hartford, Conn., for printing by R. P. Lyman, Secretary	391 37
October 22—To J. Arthur Goodwin, New Iberia, La., for expenses as Resident Secretary	2 00
October 22—To Mark White, Denver, Colo., for expenses as Resident Secretary	5 00
October 22—To American Surety Company, New York, N. Y., for Treasurer's bond	10 00
November 1—To C. J. Marshall, Philadelphia, for floral design for Dr. Leonard Pearson	10 00
November 1—To R. Fred Eagle, Kansas City, Kan., for expenses as Resident Secretary	5 35
November 1—To Fred Elray Jones, Rochelle, Ill., for fees and dues returned	8 00
November 1—To Andrew J. Kyle, Cozad, Neb., for fees and dues returned	8 00
November 1—To William Henry Lynch, Portland, Oregon, for fees and dues returned	8 00
November 1—To W. W. Parkinson, Mt. Carroll, Ill., for fees and dues returned	8 00
November 1—To Alva B. Carter, Covington, Ind., for fees and dues returned	8 00
November 1—To R. W. English, Jersey City, N. J., for fees and dues returned	8 00
November 1—To Chas. F. Roberts, New Haven, Conn., for services as reporter, Chicago meeting	198 25
December 20—To A. D. Melvin, Washington, D. C., for telegrams, postage and expressage	3 81
December 20—To W. A. Myers, Winona, Ill., for fees returned	8 00
December 20—To John W. Spence, Philadelphia, for printing, stationery, etc.	13 50
December 20—To T. E. Robinson, Westerly, R. I., for postage as Resident Secretary	1 00
1910.	
February 1—To Bryant & Douglass Book & Stationery Co., Kansas City, Mo., for letter heads, circular letters, etc	88 10
February 16—To R. A. Phillips, Oklahoma City, Okla., for expenses as Resident Secretary, 1909	1 00
February 16—To H. M. Gohn, St. John, Mich., for expenses as Resident Secretary, 1908-09	1 25
February 16—To A. H. Baker, Chicago, Ill., for postage in mailing literature to prospective members	7 50
February 16—To Samuel D. Holt, Philadelphia, Pa., for engrossing certificates of membership	75 05
February 28—To Bryant & Douglass Book & Stationery Co., Kansas City, Mo., for printing by R. P. Lyman, Secretary	127 00
March 19—To C. J. Marshall, Philadelphia, Pa., for expenses as Chairman Publication Committee	82 50
May 13—To R. P. Lyman, Kansas City, Mo., for telegrams, postage, expressage, etc	74 43
June 1—To J. B. Lippincott Co., Philadelphia, Pa., for printing and distributing proceedings Chicago meeting	1,586 33

July 8—To Bryant & Douglass, Kansas City, Mo., for printing letter heads, bill heads and circulars, by R. P. Lyman, Secretary		37 25
August 18—To R. P. Lyman, Secretary, Hartford, Conn., for typewriting, postage and office supplies		59 61
August 18—To Case, Lockwood & Brainard Co., Hartford, Conn., for printing letter heads, envelopes and circulars by R. P. Lyman, Secretary		72 10
August 18—To G. W. Clark, Marinette, Wis., for expenses as Resident Secretary		6 75
August 18—To A. D. Melvin, Washington, D. C., for postage and telegram		1 59
Total expenditures 1909-10	$	3,710 84

DISBURSEMENTS BY THE INTERNATIONAL TUBERCULOSIS COMMISSION.

1910

April 19—To A. J. Tupa, St. Paul, Minn., for typewriting for Tuberculosis Commission	$	3 10
April 19—To M. H. Reynolds, St. Paul, Minn., for expenses attending meeting Tuberculosis Commission		6 00
July 8—To Volkszeitung Job Printing Co., St. Paul, Minn., for printing for Tuberculosis Commission		22 65
July 8—To M. H. Reynolds, St. Paul, Minn., for postage stamps for Tuberculosis Commission		5 00
August 11—To C. H. Sharman, Ottawa, Canada, for reporting meeting, stenciling, typewriting, etc., for International Tuberculosis Commission		100 00
August 11—To Miss B. Drummond, Ottawa, Canada, for typewriting, stenciling, etc., for International Tuberculosis Commission		25 00
August 11—To Miss D. St. George, Ottawa, Canada, for typewriting, stenciling, etc., for International Tuberculosis Commission		25 00
August 11—To Western Union Telegraph Co., Minneapolis, Minn, for telegrams for International Tuberculosis Commission		4 40
Total expenditures	$	191 13
Grand total disbursements	$3,901 99	
Balance in bank	2,332 47	

A glance at the foregoing financial statement will satisfy the most exacting that the officers of the American Veterinary Medical Association have conducted the affairs of the organization economically, and since no complaint has been registered we are justified in concluding that our business dealings have been entirely satisfactory to all parties concerned. All of our financial obligations have been met promptly. We have not defaulted in the payment of a single account against us, and our credit for any reasonable amount is to-day unquestioned. It must be re-

membered that our credit has been maintained and the large bank balance accumulated—directly contrary to the predictions of some—with the annual dues at the low figure of three dollars. Our total expenditures during the past year have been $3,901.99. This exceeds the expenditures of the previous year by $1,410.71, while our total receipts have been $6,234.46, an excess over the receipts for the previous year of $1,710.09; hence it is a fact that our bank balance at this time exceeds our bank balance of one year ago by $299.38. It may become necessary in the course of time to raise the amount of the annual dues, but in the opinion of your Treasurer it is not desirable at the present. I desire to most heartily thank the several officers and all the members with whom I have had official business for their uniform courtesy and co-operation, which has made it a real pleasure to serve the Association in the capacity of Treasurer.

GEORGE R. WHITE, Treasurer.

San Francisco, September 6, 1910.

To the Finance Committee of the American Veterinary Medical Association:

GENTLEMEN—This certifies that Geo. R. White, Treasurer, has on deposit with the State Trust Company, to the credit of the American Veterinary Medical Association, two thousand three hundred and thirty-two and forty-seven hundredths dollars ($2,332.47).

EDGAR MAGNESS, President.

Nashville, Tenn., August 27, 1910.

REPORTS OF COMMITTEES.

REPORT OF THE COMMITTEE ON DISEASES.

Mr. President and Members of the Association:

The Committee on Diseases have the good fortune to report that during the past year our country has not been visited by any new or unusual epizootic disease. This freedom from maladies so liable to be imported to our shores emphasizes the efficiency of the Federal Veterinary departments in both the United States and Canada. Further, there has not been recorded any severe outbreak of diseases indigenous to our country that have been heretofore introduced. This indicates the great care that has been taken by those having in hand the live stock sanitation

and control of infectious diseases in our respective states and provinces.

Investigations into the nature of animal diseases and their methods of control have been more active than heretofore. The solution of the unsolved problems relative to glanders, rabies, infectious abortion, dourine, infectious anemia in horses, lip and leg ulceration, granular venereal disease of cattle, together with other maladies, will require long and repeated investigations. Meantime the profession as well as the animal owners must be patient, for "application cannot go ahead of the knowledge to be applied."

At the last meeting of the association, the Committee on Diseases recommended that a committee be appointed to formulate methods for the control of bovine tuberculosis and to report at this meeting. The association did much more than this and by resolution authorized the appointment of an International Commission to consider the subject. As the members of the Committee on Diseases were selected from the members of the Commission, it was decided that the greatest service the committee could render the association would be a series of individual papers discussing somewhat in detail various phases of animal tuberculosis and its control that could not be dealt with at length in the report of the commission. To that end the individual members of the committee will present the following papers as a part of this report:

(*a*) "Some Methods Employed in Europe to Control Bovine Tuberculosis,"[5] Dr. V. A. Moore.

(*b*) Open Air Experiment with Tuberculous Cattle," Dr. J. G. Rutherford.

(*c*) "Immunization of Cattle Against Tuberculosis," Drs. J. R. Mohler and E. C. Schroeder.

(*d*) Legislation on Bovine Tuberculosis," Dr. M. H. Reynolds.

The new discoveries in connection with many questions in general pathology, together with the recent findings relative to vaccine treatments, are signals for ever increasing activity on the part of the practitioner.

Respectfully submitted,

V. A. MOORE, Chairman.
JOHN R. MOHLER.
M. H. REYNOLDS.
E. C. SCHROEDER.
J. G. RUTHERFORD.

REPORT OF THE INTERNATIONAL COMMISSION ON THE CONTROL OF BOVINE TUBERCULOSIS.

To the President of the American Veterinary Medical Association:

Owing to the great economic and sanitary significance of animal tuberculosis to the live stock industry of America, and the many and varied factors which must of necessity be accounted with in formulating successful measures for its eradication, the American Veterinary Medical Association, at its meeting in Chicago in September, 1909, appointed the International Commission on the Control of Bovine Tuberculosis. The Commission was instructed to study the problem of tuberculosis among cattle and to report at the next meeting of the association upon reasonable and economically practicable methods or systems to be recommended to both officials and live stock owners for eradicating this great scourge of domesticated animals.

It is recognized that tuberculosis is widely prevalent among cattle and other animals and that the frequency with which this great evil occurs is increasing rather than declining. As tuberculosis is one of the strictly preventable infections, there is good ground for the belief that through the formulation and enforcement of proper regulations the disease may eventually be entirely suppressed.

The Commission has held four meetings as follows: Buffalo, N. Y., December 13 and 14, 1909; Detroit, Mich., March 1 and 2, 1910; Ottawa, Canada, May 19, 20 and 21, 1910; Madison, Wis., June 27 and 28, 1910, all of which were well attended, very few of the members having on any occasion been absent. The Commission begs to present as a result of its labors the following report which, although brief, will, on examination, be found to comprise the principal points essential to the promulgation of a comprehensive and practical policy, such as may reasonably be adopted by any governmental body interested in the control of bovine tuberculosis.

It is quite unnecessary in view of the extensive knowledge already possessed by all who are familiar with the efforts which have hitherto been made to secure control of bovine tuberculosis, to dwell at any length upon the importance of the subject or upon the conditions which led to the formation of the Commission.

In view of the personnel of the Commission as selected by the American Veterinary Medical Association, and of the fact

that so much information on the subject has been made available through the work of similar bodies in other countries, and the researches of scientific and practical men in America and elsewhere, the Commission has not deemed it necessary to take any evidence either from expert witnesses or others.

The members fully understood that the purpose which their appointment was intended to serve was less the acquisition of new knowledge regarding bovine tuberculosis than the careful study of the knowledge already available, and of the thoughts and opinions of those most entitled to speak with authority on the subject.

The conclusions reached in this report are, therefore, simply the outcome of an earnest and thoughtful consideration of the various modern aspects and phases of the problem, with the object of crystallizing public opinion and so clearing the way for legislative action.

They realized also that they could deal with fundamental principles only, and that the details of any policy which they might outline must in each case be worked out by the duly authorized and responsible representatives of the community immediately concerned.

They nevertheless deemed it essential to study closely the history of the various efforts hitherto made by such countries throughout the world as have attempted to legislate on the subject.

This naturally led to the gradual elimination of all methods other than such as might reasonably be adopted by any community desiring, in the full light of present day knowledge, to undertake the control of bovine tuberculosis.

It was felt, in view of the prevalence of the disease, especially in some localities and among certain classes of cattle, the difficulty of providing a sufficient number of trained officials and the large economic questions involved, to say nothing of the enormous expenditure, that it would be unwise for the present at least, to seriously discuss a policy of universal compulsory testing and slaughter.

Such a policy might perhaps be adopted with advantage by a small community, or one in which the disease existed to a very limited extent, but speaking generally, especially in view of past experiences in this line, it was thought better to omit it entirely from the recommendations of the Commission.

All other methods of dealing with bovine tuberculosis which have been recommended or tried in various communities, were thoroughly discussed, with the object of discarding weak points and adopting such features as might be deemed worthy of a place in the official findings of the Commission.

Every phase of the subject was in this way fully and freely considered, it being thought best to cover the whole ground as completely as possible before coming to a definite decision on any one point.

In order to still further minimize the risk of omitting from the deliberations of the Commission any phase of the question, four committees were appointed at the first meeting to deal respectively with:

(1) Education and legislation.
(2) Location of tuberculosis.
(3) Dissemination,
(4) Disposition of tuberculous animals.

The appointment of these committees proved to be of the greatest possible value in concentrating the energies of the various members on those branches of the subject with which they were most familiar, and their reports presented at subsequent meetings enabled the Commission to reach satisfactory conclusions much more rapidly than would otherwise have been the case.

As a means of furnishing information as to the reasons for these conclusions and the manner in which they were reached, the Commission would recommend that the reports of the committees should be published as an appendix to this report.

The Commission recognizing after careful study that the tuberculin test is the fundamental factor in any policy having for its object the control of bovine tuberculosis, decided that a pronouncement to that effect should properly occupy a foremost place.

Based on the information contained in the reports of its committees and on such other information as was brought out in the general discussions of the Commission, the following resolutions were adopted for presentation to the American Veterinary Medical Association.

Resolution 1—Dissemination.

As a general policy to be observed all contact between tuberculous and healthy cattle and between healthy cattle and stables,

cars, etc., which may contain living tubercle bacilli should be prevented. To accomplish this the following specific recommendations are made:

1. There should be no sale or exchange of animals affected with tuberculosis except for immediate slaughter or for breeding purposes under official supervision.

2. That the managements of live stock shows should give preference to cattle known to be free from tuberculosis, either by providing special classes for such cattle or in some other practical way, and should also take every precaution to prevent contact between such animals and those not known to be free from disease.

3. All live stock shippers should take every precaution to see that cars furnished are thoroughly cleansed and disinfected before use.

Resolution 2—Tuberculin Test.

1. That tuberculin, properly used, is an accurate and reliable diagnostic agent for the detection of active tuberculosis.

2. That tuberculin may not produce a reaction under the following conditions:

(*a*) When the disease is in a period of incubation.
(*b*) When the progress of the disease is arrested.
(*c*) When the disease is extensively generalized.

The last condition is relatively rare and may usually be detected by physical examination.

3. On account of the period of incubation and the fact that arrested cases may sooner or later become active, all exposed animals should be retested at intervals of six months to one year.

4. That the tuberculin test should not be applied to any animal having a temperature higher than normal.

5. That any animal having given one distinct reaction to tuberculin should thereafter be regarded as tuberculous.

6. That the subcutaneous injection of tuberculin is the only method of using tuberculin for the detection of tuberculosis in cattle which can be recommended at the present time.

7. That tuberculin has no injurious effect on healthy cattle.

Resolution 3—Evidence from Tuberculin Test.

That a positive reaction to tuberculin in any properly conducted test, official or otherwise, in any animal in any herd, shall be considered evidence sufficient upon which to declare the herd to be infected.

Resolution 4—Compulsory Notification.

That this Commission recommends the passage of legislation providing for the compulsory notification by owners and by veterinarians of the existence of tuberculosis in a herd whether such existence be made known by detection of clinical cases or by the tuberculin test.

Resolution 5—Location Through Slaughter.

This Commission recognizes that the discovery of tuberculosis in animals slaughtered for food purposes furnishes one of the best possible means of locating the disease on the farm, and therefore recommends the adoption of some system of marking, for purposes of identification, all cattle three years old and over, shipped for slaughter.

As tuberculosis of hogs in almost invariably due to bovine infection, this recommendation should also be made to apply to hogs of any age shipped for slaughter.

It is further recommended that the discovery of tuberculosis in animals coming under Government Inspection should be used whenever identification is possible, as a means of locating infected herds and premises. All such cases should be reported to the proper authorities for control action.

Resolution 6—Disposition of Tuberculous Animals; the Commission Plan.

1. As a general policy in the eradication of tuberculosis the separation of healthy and diseased animals, and the construction of a healthy herd are recommended.

In order to accomplish this, the following recommendations are made:

(1) If the herd is found to be extensively infected, as shown by the tuberculin test or clinical examination, even the apparently healthy animals in it should be regarded with suspicion, until they have been separated from the reacting animals for at least three months.

If after the expiration of this time they do not react to the tuberculin test, they may be considered healthy and dealt with accordingly.

It is recommended that a herd extensively infected should not be treated by the method of general separation, but that the construction of a new herd from the offspring only is advisable.

(2) If the herd is found by either or both of the above methods, to contain a relatively small proportion of diseased animals, separation of the diseased animals from the healthy animals, and the construction of a sound herd from the healthy animals, and the offspring of both, is advocated.

As a working basis in carrying out these principles we advise:

(*a*) That herds containing 50 per cent. or more of diseased animals be treated as coming under Section 1.

(*b*) That herds containing under 15 per cent. of diseased animals be treated as coming under Section 2.

(*c*) That herds falling between these figures be graded according to the option of the owner.

(*d*) That it shall be the prerogative of the owner to reject either plan and have his herd dealt with by removal and slaughter of diseased animals, with or without compensation, according to the public policy in operation.

2. That when by any means the officials properly charged with the control of tuberculosis become aware of its existence in a herd to which a policy of slaughter and compensation cannot reasonably be applied, such herd must be dealt with by the owner, under government supervision, on the principle of the separation of all sound animals from those affected. Such separation must be effected by treating the whole herd as diseased, and rearing the calves separately, either on Pasteurized milk or the milk of healthy cows, or when the number of those affected is so small as to warrant such a course, by the application to the whole herd, from time to time, under official supervision, of the tuberculin test, and the entire segregation of all animals found to react.

In the event of any owner refusing or neglecting to adopt either of the above methods, his entire herd to be closely quarantined, and sales therefrom to be entirely prohibited.

3. That a policy of compensation be recommended as useful and usually necessary as a temporary measure.

4. That, when slaughter is necessary, in order to avoid economic loss, every effort should be made to utilize as far as possible the meat of such animals as may be found fit for food on being slaughtered under competent inspection.

5. The details of the Commission Plan will be found fully set forth in the Appendix to this report.

Resolution 7—Prevention.

1. That, with the object of preventing the spread of infection, persons buying cattle for breeding purposes or milk pro-

duction should, except when such purchases are made from disease-free herds which have been tested by a properly qualified person, purchase only subject to the tuberculin test. In order to assist in the proper carrying out of this suggestion, the Commission recommends that official authorities should adopt such regulations as will prevent the entry to their respective territories of cattle for breeding purposes or milk production unless accompanied by satisfactory tuberculin test charts.

2. That all milk and milk by-products used as food should be properly Pasteurized unless derived from cows known to be free from tuberculosis.

Resolution 8—Control of Tuberculin Test.

That this Commission recommends the passage of legislation which will prevent the sale, distribution or use of tuberculin by any persons other than those acting with the full knowledge, or under the direction of official authorities.

Resolution 9—Education.

As a clear knowledge of the cause and character of tuberculosis among animals, the modes of dissemination, its significance as an economic and as a public health problem, underlie an intelligent adherence to the principles that must be observed in all efforts for eradication, as well as the establishment of proper cooperation in the great work between physicans, veterinarians, live stock owners, legislators, and the public generally, it is recommended that a widespread campaign of education be undertaken. To accomplish this end it is recommended that first of all a simple pamphlet on bovine tuberculosis be written, in which the language used shall be of such character that every person of average intelligence shall be able to read it without being mystified by technical terms or phrases. This pamphlet should be published with the endorsement of the American Veterinary Medical Association and the special endorsement and consequent authority of the International Commission on Bovine Tuberculosis Control.

Resolution 10—Publicity.

In concluding its work the Commission desires to especially appeal to the press, metropolitan, agricultural and local, to join

in the work of extending as much as possible among the people the conclusions here arrived at. The vital importance of the life of farm animals to the welfare of all classes of society needs no argument in its support. The aim and sole purpose which has actuated this Commission has been to arrive at the soundest conclusions possible in the light of the best knowledge obtainable.

Resolution 11—*Legislation.*

It is recommended that legislation regarding the control and eradication of tuberculosis among domestic animals be made uniform; that the laws of the United States and Canada and other American countries for the admission into America of animals from without be made stringent and as much alike as possible; and that the laws governing the interstate and interprovincial movement of cattle and that between different American countries be harmonized.

The laws governing interstate and interprovincial movement of cattle should be of such character that every state and every province will be free in its eradication work from unnecessary difficulties due to the existence of the disease in other states and provinces.

Legislation is especially required to prevent the various frauds which interfere with the satisfactory use of tuberculin as a diagnostic agent for tuberculosis, as well as for official supervision over all tuberculin sold to be used by veterinarians and others.

Resolution 12—*Sanitation.*

In the eradication of tuberculosis it should be kept in mind that, in addition to protecting animals against exposure to tubercle bacilli, it is desirable to make them as resistant to infection as possible. This can be done by stabling them in clean, disinfected and properly ventilated and lighted barns, giving them abundant clean water and nutritious food, a sufficient amount of daily exercise in the open air, and attending generally to those conditions which are well known to contribute to the health of animals.

The daily removal of manure from stables and water-tight floors and good drainage in stables are urgently recommended.

Young stock particularly should be raised as hardy as possible and should be accustomed to liberal exercise and living in the open.

Resolution 13—Immunization.

That as none of the various methods for the immunization of animals against tuberculosis have passed sufficiently beyond the experimental stage, the Commisson is unable to endorse any of these for practical use at the present time.

Resolution 14—Animal Tuberculosis and Public Health.

While the members recognize that the subject with which this Commission is primarily intended to deal is the control and eradication of tuberculosis among animals as an economic problem, they cannot feel satisfied without declaring their recognition of the fact that tuberculosis among animals is also an important public health problem. Considered as such, the eradication of tuberculosis among animals should have the approval and support of all those persons who are interested in curtailing human suffering and prolonging human life.

Resolution 15—General Statement.

The members of the Commission wish it to be clearly understood that they recognize the limitations of a report necessarily based on actual and not on theoretical conditions. They fully realize that in the event of the policy of which their recommendations form the framework, being anywhere adopted even in its entirety, much greater benefit will be derived, at least for some time, from its educative than from its executive features.

The control to say nothing of the eradication of bovine tuberculosis, is impossible of achievement without the hearty co-operation of the men who are actually engaged in the cattle industry. In order to secure this co-operation, it will doubtless be necessary, in most committees, to carry on an active and prolonged educational campaign.

It is apparent that in the dissemination of practical and reliable information regarding the disease, it will be possible to employ a very large variety of methods. Many of these methods, such as bulletins, lectures and actual demonstrations of disease, having already been found valuable, will doubtless continue to be largely used.

It must not be forgotten, however, that in this, as in any other educative process, a measure of disciplinary control is essential to success.

Needless to say such control can be secured only by the passage of legislation which, while clear and comprehensive must, at

the same time, be sufficiently conservative to avoid exciting alarm or arousing antagonism on the part of owners especially of valuable herds.

The best law ever framed can be made an utter failure by stupid or injudicious administration, while, on the other hand, the most drastic legislation can be rendered acceptable if enforced with reasonable tact and diplomacy.

Provided, therefore, that these qualities, combined with integrity, thoroughness and determination, are available for administrative purposes, the members of the Commission are convinced that the enforcement of a law based on their recommendations will prove to be by far the most powerful and effective educational agency which could possibly be employed.

In concluding its report, the Commission would suggest that the association should make such provisions as may be necessary to carry on the work either by continuing the Commission as at present constituted, or with such changes in the personnel as may be considered desirable.

(Signed)

W. C. EDWARDS.	C. A. HODGETTE.	M. P. RAVENEL.
J. J. FERGUSON.	J. N. HURTY.	E. C. SCHROEDER.
J. W. FLAVELLE.	J. R. MOHLER.	T. W. TOMLINSON.
W. D. HOARD.	V. A. MOORE.	F. TORRANCE.

J. G. RUTHERFORD, Chairman. M. H. REYNOLDS, Sec'y.

APPENDICES TO FOREGOING REPORT.

REPORT OF THE SUB-COMMITTEE ON EDUCATION.

The Sub-Committee on Education respectfully submit the following:

Bovine tuberculosis has become widely distributed throughout the United States and Canada, and it has been determined that efficient systems or methods for its eradication and prevention either under the supervison of the state or nation or by the cattle owners themselves are of necessity based on a knowledge of the nature of the disease and its means of dissemination.

Experience has shown that the principles of eradication and prevention may be successfully applied by individual owners of infected cattle, independent of state assistance.

Such individual aid is essential in conjunction with state or national assistance in the prompt eradication of the disease from infected herds and the prevention of its entry to non-infected herds. Therefore it is the sense of this committee that every possible means should be employed for educating the cattle owners and the general public concerning the nature of tuberculosis; the care and precautions necessary to prevent its entrance into herds already free from the disease; and in methods for its eradication from herds where it now exists.

Further, this committee approves of the following methods for instructing laymen, practising veterinarians, practitioners of human medicine and health officers in the nature and control of bovine tuberculosis, namely:

1. By the publication in agricultural and dairy papers of short, accurate and carefully prepared articles on bovine tuberculosis.

2. By the publication of appropriate articles on bovine tuberculosis in veterinary, medical and sanitary papers and journals.

3. By recommending to agricultural societies, granges and directors of farmers' institutes and unions and especially those interested in creameries and cheese factories that lectures on bovine tuberculosis, its nature and control, be made a part of their programs, and that so far as practical, demonstrations be held.

4. That those having in charge the arrangement of town, county and state fairs be requested to provide lectures on bovine tuberculosis, and if practicable to hold public demonstrations, at their annual meetings.

5. By placing a copy of the report of the commission in the hands of the deans or directors of all veterinary and medical colleges and schools of sanitary science in the United States and Canada with recommendations that special emphasis be placed in their courses of instruction on the nature of bovine tuberculosis and methods for its control.

6. That a pamphlet dealing with the nature of bovine tuberculosis and methods for its control should be written in language intelligible to the layman. This pamphlet should have the approval of this commission and the endorsement of the American Veterinary Medical Association. It should be published for free distribution.

7. That Departments of Agriculture, state veterinarians, live stock sanitary boards and others interested in the official control

of bovine tuberculosis be requested to promote as much as possible the educational features of their work, with the object of obtaining more support and co-operation from cattle owners.

The methods suggested for carrying out an educational propaganda are not to be considered at the exclusion of any and all other ways by which the public may become informed on the nature of bovine tuberculosis, its great economic importance and the necessity for an intelligent and united effort on the part of cattle owners and those having charge of the control of animal diseases to eradicate this great scourge.

The committee is of the opinion, from the history of the legislation regarding bovine tuberculosis in those states and countries which have attempted to deal radically with the problem, as well as from the special information which has been furnished by this committee to its members, and the light thrown upon the subject in the discussions at its several meetings, that in order to avoid friction and failure, all important legislation with reference to tuberculosis must be prepared with due consideration for the condition of public sentiment and information on this subject.

That tuberculosis control work should be developed in a progressive way.

That tuberculin tests made at a distance for public recognition (for example, in other states or foreign countries) can only be done satisfactorily by official veterinarians.

That the Delepino or Manchester plan of tuberculosis free areas gradually extended seems worthy of cautious trial.

(Signed) M. H. REYNOLDS, Chairman.
W. D. HOARD.
J. G. RUTHERFORD.

GOV. HOARD'S REPORT.

Educational Means for the Suppression and Control of Bovine Tuberculosis.

Mr. President and Gentlemen of the Commission—I place a high value on the work this Commission may do if performed wisely, in shaping the conviction and purpose of the people of Canada and the United States concerning the prevention and control of Bovine Tuberculosis.

As yet, that conviction is but little more than an ill-defined dread of something not clearly understood by the great mass of

farmers. Adding to this dread is a hope stronger yet, that the evil is not as great as has been asserted; that it is a scare that will soon pass over. And yet, in the minds of farmers and breeders generally, especially in those localities where demonstration work has not been had, there is a strong under current of conviction that all this talk about the disease is an interested plea of the veterinarians, that the trouble does not amount to much if the doctors and editors would hold their tongues and pens.

Just as long as this bank of fog exists, it will control all legislation and individual effort, to get rid of the difficulty. At the bottom of the matter is a widespread ignorance on the part of farmers as to the danger that threatens them; it is difficult to arouse them out of their conservation, for as yet all they know about it is talk.

The conservatism of intelligence is vastly different from that which exists because of a lack of knowledge. The first demands more light; the latter dreads light.

From what I have seen in Wisconsin, I am convinced that the most powerful aid to that action against the disease which this Commission is so anxious to bring about is public demonstration. One animal slaughtered before a body of farmers, and the diseased parts exposed to their plain view, is worth more to foster conviction and inspire effort than anything else that can be done. If the federal and state governments would devote means for this demonstration work, it would prove a most powerful educator. Public agitation, in farmers' gatherings, and the talk of the agricultural press is useful mainly in keeping alive an interest in the subject. But, gentlemen, we must remember that with the majority of men, a large majority, "seeing is believing."

I believe, therefore, that this Commission should use its influence in urging legislation by municipalities and state and national legislatures for the spread and support of this demonstration work. Great care must be exercised, however, to select only such animals as will amply show forth the ravages of the disease. The great progress we have made in legislation in Wisconsin, and in securing a widespread acquiescence in the use of the tuberculin test, would never have come, had it not been for a large number of public demonstrations held in various parts of the state. We have gone as far as this in legislation: That after December 1, 1910, all animals sold for breeding or milking pur-

poses, must first be tuberculin tested. This, I believe, is a step further in advance than has been taken by any other state. It shows well the tone and temper of our farmers and the work which has been done to acquaint them with a true understanding of the situation. It is needless for me to say that if they are for the law, or any law, it goes; if they are against it, it is at best a dead letter. It is worth a great deal in the promotion of such objects to have a Live Stock Sanitary Board in a state that will take hold and lead in this work. In too many instances these organizations are purely negative in their influence, and so nothing is done. There is a notable lack of funds to bear the expense of demonstration work. The farmers everywhere would willingly be taxed for its support. Municpalities could well afford to have such expense for the sake of the education it would afford to consumers of meat and dairy products.

In conclusion, I would urge upon this Commission that special emphasis be placed upon the promotion of public exhibitions of diseased cattle before and after slaughter, as the most powerful means of education concerning the nature and danger of Bovine Tuberculosis.

(Signed) W. D. HOARD.

REPORT OF COMMITTEE ON LOCATION OF TUBERCULOSIS IN CATTLE.

Your Committee on the Location of Tuberculosis in Cattle desires to submit the following as its report upon this subject:

Though we are all agreed that no method for detecting tuberculosis in cattle equals the tuberculin test, we are forced to recognize that the universal application of the test under existing conditions is practically and economically impossible. The number of cattle to be tested, for example, is so great that, if all the available veterinarians and all such other persons as may be trusted to make tuberculin tests should be started on this work at once, and kept at it, years would pass before all the cattle in the United States and Canada could be tested even a single time. Consequently, our efforts to locate tuberculosis among cattle should depend primarily upon other means than the tuberculin test.

The tuberculin test should be regarded as having only an incidental value in the systematic work of locating tuberculosis, and as being of pre-eminent importance when we undertake the determination of the extent to which the disease is prevalent at

any point in any herd where it has been located by other means or, incidentally, by the tuberculin test.

In the order of seeming importance the means of location may be placed as follows:

1—*Notification.*

A law should be enacted requiring any and every person having knowledge of the existence of a case of tuberculosis among cattle to report the same without delay to some proper, designated authority. Such a law would be practically equivalent to the obligatory reporting of all clinical cases of tuberculosis which must be recognized as the most serious disseminators of tubercle bacilli and propagators of tuberculosis.

Since all cases of tuberculosis that are centers from which infection is being scattered, gradually become clinically recognizable, obligatory notification of all recognized cases of tuberculosis would alone in the course of a few years locate the majority if not all badly diseased herds. It would certainly locate tuberculous cattle and herds faster than they can be handled for some years to come.

2—*Evidence Through Meat Inspection.*

An effort should be made to trace tuberculous animals back from slaughter houses to the farms from which they were derived. This is important because if the well-conditioned animals which go to slaughter for meat are tuberculous, it is probable that among the animals retained on the farm some active disseminators of tubercle bacilli exist, which are retained at the farm either through ignorance or a false idea of economy.

Meat inspection has already done much to establish infected areas from which tuberculous animals have been sent to market. At present, however, it is difficult to trace animals to the farms from which they were shipped, and some method of identification by means of which any animal found on the killing floor to be tuberculous can be traced to its place of origin is greatly to be desired. A federal law requiring appropriate tagging, branding or otherwise identifying all hogs and dairy cattle moving interstate for slaughter and state laws compelling similar identity marks for these animals moving within the state for slaughter would be the means of locating a large proportion of the centers of tuberculosis. Experimental work of this char-

acter which has been carried out in the past has given very interesting results. For instance, when the occurrence of tuberculosis among hogs at an abattoir is followed up by a tuberculin test of the cattle on the home farm, it practically always discloses tuberculosis among these animals. Like much other evidence this encourages us to believe that tuberculosis among hogs will cease to exist as an economically important problem as soon as we succeed in controlling the bovine source of tubercle bacilli.

3—*The Tuberculin Test.*

When the tuberculin test is applied to cattle for any purpose it should be clearly understood that the reacting animals are to be regarded in every sense of the word as recognized cases of tuberculosis, which under an obligatory notification law, must be reported at once to the proper authority. In this way tuberculin will serve as an important means of locating tuberculosis among cattle that are tested for reasons like the following:

(1) To obtain healthy animals for export.

(2) To make sure that animals imported are free from tuberculosis.

(3) To make sure that animals intended for interstate movement are free from tuberculosis. And here we would like to suggest that the states should protect themselves as much as possible against bovine tuberculosis by insisting that no new cattle shall be brought in until they have been shown by the tuberculin test to be free from tuberculosis. The time we may hope is not far off when even breeders of exceptionally fine strains of blood will begin to realize that the very best blood coupled with tuberculous infection is an article to be shunned, not because we wish to imply that tuberculosis is hereditary, but because we know how readily it is conveyed from animal to animal by contact.

(4) To obtain from animals shown in the most conclusive manner to be free from tuberculosis, irrespective of whether the milk is intended for special certification or for more general or regular city use.

5. To satisfy an owner of cattle that his herd is free from tuberculosis or to give him the informaton he needs to clean his herd from disease.

In whatever way the tuberculin test is applied, or for whatever purpose, all positive reactions obtained should be regarded as placing the reacting animal in the category of recognized cases

of tuberculosis, which must be reported under a notification law. As the newer methods of applying tuberculin for test purposes have not been found to be as reliable as the older, subcutaneous method, they cannot be advocated. The ophthalmo and cutaneous tuberculin tests may have a value in some special cases, as for example, where doubt exists about the reliability of a subcutaneous test because an animal may have been subjected to some pernicious manipulation. In this sense these later modes of applying tuberculin should be kept in mind.

4—*Examination of Material from Cattle and Herds.*

The valuable evidence that may be obtained as to the location of tuberculosis through the examination of milk, cream, butter, centrifuge slime and other products and materials from cattle should not be neglected, especially when these examinations are made by health officers and others for the protection of public health, and are followed up by the inspection of the animals and the character of their environment as a routine procedure. Such inspections are constantly becoming more prevalent in various sections of the United States and Canada.

5—*Most Important Sources of Animal Tuberculosis.*

Tuberculosis as it exists among the domestic animals of America to-day undoubtedly owes its primary introduction to the cattle of improved breeding that have been imported from European lands from time to time in the past, for the purpose of improving the native stock of the country. No particular breed is to be incriminated in this charge, as several of the most prominent and popular breeds have been found guilty of furnishing tuberculous individuals to the best American herds on repeated occasions. The knowledge that infection has taken place from these sources in the past affords us a valuable indicator of the points where search should be made in our efforts to detect the cases of tuberculosis that exist to-day upon the farms of the country. First of all, then, attention may be directed toward all herds of pure bred cattle whether of beef or dairy type, especially to those from which cattle are sold, either by private or public sale, and from which cattle are thus distributed to various parts of the country; also to herds from which members are exhibited at fairs and exhibitions; and herds which keep males for custom service.

In addition to these herds of pure bred cattle, there are many others to which well-bred stock has been added for the purpose of grading up and improving the quality of the individuals of the herd. These in some instances have received the infection of tuberculosis with the new animals from which such great benefits had been expected, and these herds of well graded cattle should also be regarded with suspicion until they have been proved to be free of tuberculosis. Next in order should come all dairy cattle, but the methods by which the disease may be located in these herds has been discussed above.

(Signed) JOHN R. MOHLER, Chairman.
J. W. FLAVELLE.
C. A. HODGETTS.

REPORT OF COMMITTEE ON DISSEMINATION OF BOVINE TUBERCULOSIS.

The Sub-Committee on the Dissemination of Bovine Tuberculosis respectfully submits the appended report on the means for the dissemination of this disease, based on the present knowledge of the life history of the tubercle bacillus. The possible means for the dissemination of this disease are enumerated as follows:

1. The introduction into a sound herd of an animal or animals affected with tuberculosis: (*a*) those with open tuberculosis; (*b*) those in which the disease is in a period of incubation, and (*c*) those in which the lesions are temporarily arrested. The last group will not transmit the infection speedily, and possibly may never do so. The first group is certain to spread the virus.

2. By feeding calves milk, whole or separated, buttermilk or whey, where the milk has come from tuberculous cows.

3. By bringing cattle suffering from open tuberculosis in contact with healthy ones at fairs, cattle shows and other exhibitions.

4. By shipping healthy cattle in cars not thoroughly disinfected, recently occupied by tuberculous cattle.

5. By placing healthy cattle in stables that have not been thoroughly disinfected and which were recently occupied by tuberculous animals, as frequently happens with the change of farm ownership or tenants.

6. Tuberculous animals which do not react to tuberculin, such as those in the period of incubation or latent cases, but

which develop active tuberculosis later, are frequently carriers of the virus, although bought and sold as sound animals. These cannot at present be differentiated from sound animals. Therefore, all cattle coming from herds in which the disease exists should be considered as suspicious. The sound herd is the unit to deal with.

7. Tubercle bacilli may be transmitted by tuberculous cattle running in a pasture to healthy cattle in adjoining pastures where they are separated by a fence of such nature that the cattle may get their noses together.

8. Tuberculosis in cattle rarely, if ever, occurs through infection from (*a*) man, either directly or as a carrier of bovine tubercle bacilli; (*b*) from other species of animals, or (*c*) by infection from the droppings of crows, buzzards or other birds or carnivorous animals that have fed upon the carcasses of tuberculous cattle. It is the opinion of this committee that bovine tuberculosis is spread largely through the introduction of tuberculous cattle into sound herds; by the feeding of calves with infected milk, or milk products; by exposing sound animals to infected ones at fairs, or other cattle shows; and by exposing them to infected cars and stables. There are other ways in which now and then it is possible that an animal may become infected, but the means of dissemination mentioned in this paragraph are those to be guarded against in formulating efficient methods of control.

V. A. MOORE, Chairman.
E. C. SCHROEDER.
M. P. RAVENEL.

REPORT OF COMMITTEE ON DISPOSITION OF TUBERCULOUS ANIMALS.

Your Committee on the Disposition of Tuberculous Animals begs to submit the following report:

In the work of control and eradication of tuberculosis in animals it is first of all of the utmost importance to establish the presence of the disease in all the affected cattle, since only by such a procedure will it be possible to guard the healthy and newly-born animals from infection.

Fortunately we are in a position to determine with considerable certainty the vast majority of occult cases of tuberculosis in cattle, even the incipient cases, with the aid of tuberculin, and the clinical cases by physical examination. This alone consti-

tutes a great advantage in the work of suppression of the disease. The tuberculin test should therefore be considered as a very important step in the eradication of tuberculosis. As a matter of fact all the recognized authorities on the subject are agreed on this point. Once the tuberculous animals are recognized, consideration must be given to the most suitable and economical way of eradicating the disease from the herd. This naturally brings up the question of the disposition of the tuberculous animals, and in adopting any particular method, one should be guided by the extent of the infection in the herd, the quality of the affected animals, the sanitary condition of the premises, and last, but not least, the owner's intelligence and knowledge of the subject. The latter information is necessary to determine if reliance can be placed on the owner to carry out minutely all the details which are essential in executing any particular method of eradication that may be decided upon. The owner's co-operation in this work is without doubt a very essential feature of this great task. For this reason a campaign of education of the farmers and stock raisers relative to the control of tuberculosis in which all the advantages of the eradication of tuberculosis must be impressed on them, would greatly facilitate this important campaign. It is a well-known fact that any voluntary method of suppression by the herd owners themselves would bring about better and quicker results than when compulsory measures are enforced upon them by legislative enactments. Nevertheless the time has arrived when a campaign looking towards the control of this disease should be entered upon by the general government as well as the state and province. This campaign must reach in the first place all the clinical pulmonary forms of tuberculosis; then tuberculosis of the udder, intestines and uterus.

Having removed these exceedingly dangerous cases, the balance of the tuberculous herd may be treated by the Bang system, which consists of the establishment of two herds of cattle, one containing the animals which react to tuberculin, and the other those that proved to be healthy. Each class of cattle is kept entirely separate from the other, in different stables when possible, and under the care of separate attendants, using separate utensils. The calves born of the diseased cows are removed from their mothers at birth and placed in the stable with the healthy animals where they are reared upon the milk of healthy cows or upon other milk which has been properly pasteurized. In this way the healthy portion of the herd constantly increases, while

the diseased animals are disposed of as rapidly as may be deemed necessary until finally all of them are gone and the remaining herd is composed entirely of healthy cattle. The tuberculin test is applied to the healthy herd at regular intervals, annually or semi-annually, in order to detect any cases of latent tuberculosis or recent infection which may appear.

A modification of the Bang system is Ostertag's method of suppressing tuberculosis. This system demands only a clinical examination of the original herd with the elimination of all open cases of tuberculosis. The calves from the remaining cows are immediately removed and brought up on pasteurized milk in the same manner as in the Bang system, and a new herd is thus established from the young stock. Healthy nurse cows could be used for these calves instead of feeding them on pasteurized milk. The tuberculin test is applied to this new herd at stated intervals in order that any cases of tuberculosis which may develop therein may be discovered promptly. Neither of these systems, however, has met with much favor in this country, as it required a considerable length of time and care to create a herd free from tuberculosis by either of them. Nevertheless the inauguration of Bang's or Ostertag's method in herds of valuable animals whether they be dairy or beef breeds is unquestionably of an economic value and in such cases either of these systems should be encouraged. On the other hand, in ordinary beef or dairy herds, the practice of Bang's or Ostertag's method in this country has not met with much encouragement, owing to the extraordinary supervision, time and labor as well as the loss of market milk from the reacting cows which it involves.

In such herds the best ultimate results have thus far been obtained by the obligatory disposal of all the clinically affected cows and giving the dairyman the alternative either to pasteurize the milk from the remainder of his herd, or to be forced to refrain from selling the raw milk from the infected herd at all. In case he adopts the former method the herd composed of diseased and healthy cattle should be placed in quarantine under the supervision of sanitary authorities, and no sales should be permitted from the herd excepting for immediate slaughter. The alternative method will compel him to dispose of his tuberculous animals in the case he refuses to pasteurize the milk. The suppression of tuberculosis could be greatly facilitated and the cooperation of many of the herd owners could be gained by a provision by which a certain percentage of indemnity could at least

for a term of years be paid for the condemned animals. The scale for such an indemnity should be arranged in accordance with the final disposition of the carcass under competent inspection.

Another method of eradication should receive serious consideration as being of value in some localities. This is known as the Manchester system, which is either the Ostertag or Bang system applied to localized areas or even individual farms, from which centers the work progresses to surrounding or neighboring districts and farms. Inasmuch as the animals affected with clinical tuberculosis are the greatest sources of danger in the dissemination of the disease, compulsory reporting of such cases should be inaugurated by the state, as is now done in many places in the control of human tuberculosis. Mandatory reporting of these cases and their prompt slaughter are very essential, as only by the elimination of these exceptionally dangerous cases can it be hoped to take up all the other details by which a successful control of bovine tuberculosis may be accomplished.

In conclusion your committee, having regard to the disposition of pure bred cattle, or valuable animals kept for either breeding or dairy purposes, would strongly recommend a system requiring the removal of all clinical tuberculous animals from the herd, the segregation of all calves from the remaining cows in order to establish a new, clean herd, the use of tuberculin tested nurse cows or pasteurized milk for these calves, and the periodic application of tuberculin to this newly established herd, as the only thoroughly reliable one.

(Signed) W. C. EDWARDS, Chairman.
JOHN R. MOHLER.
FREDERICK TORRANCE.

APPENDIX "E."

THE COMMISSION'S RECOMMENDATIONS ON ERADICATION—A COMPOSITE OF THE METHODS OF BANG AND OTHERS.

The Commission after stating the known facts regarding the nature of tuberculosis and enumerating the principles to be observed in its prevention and eradication, recommends the following plan of procedure. It is recognized that in several points there are opportunities, in order to meet individual needs, to change or modify the directions herein given. It is understood.

however, that whenever such modifications are made they should conform in the greatest detail to the principles laid down in the report of this Commission. The plan has for its purpose the conservation of the herd whenever that is possible.

The control of bovine tuberculosis involves a definite procedure under two distinct and different conditions, namely: (1) Where a herd of cattle is free from tuberculosis and it is to be kept so, and (2) where one or more animals in the herd are infected and the purpose is to eradicate the disease and establish a sound herd.

Procedure Under Condition (1)—The prevention of tubercular infection in cattle, free from tuberculosis, consists simply in keeping tuberculous cattle or other animals away from the sound ones; in keeping tuberculous animals out of pastures, sheds or stables where the sound ones may be kept. Healthy cattle should not be exposed to possible infection at public sales or exhibitions. Raw milk or milk by-products from tuberculous cows should not be fed to calves, pigs or other animals. Cars that have not been thoroughly disinfected should not be used for the transportation of sound cattle. Cattle that are purchased to go into sound herds should be bought from healthy or sound herds only.

Procedure Under Condition (2)—The eradication of tuberculosis from infected herds requires, for conservation of the herd, different procedures according to the extent of the infection. For a guide to the control of the disease tuberculous herds may be divided into three groups, namely:

1. Where fifty per cent. or more of the animals are infected.
2. Where a small percentage (fifteen per cent. or less) of the animals are affected.
3. Where a larger number (fifteen per cent. to fifty per cent.) of the animals are diseased.

In eliminating tuberculosis from infected herds the following procedure is recommended:

Group. I.

Herds where a tuberculin test shows fifty per cent. or more of the animals to be infected should be treated as entirely tuberculous. The procedure here is as follows:

1. Eliminate by slaughter all animals giving evidence of the disease on physical examination.

2. Build up an entirely new herd from the offspring. The calves should be separated from their dams immediately after birth and raised on pasteurized milk or on that of healthy nurse cows. This new herd must be kept separate from any reacting animals.

3. The young animals should be tested with tuberculin at about six months old, and when reactors are found at the first or any subsequent test, the others should be retested not more than six months later. When there are no more reactors at the six months' test annual tests should thereafter be made. All reacting animals should at once be separated from the new herd and the stables which they have occupied thoroughly disinfected.

4. When the newly developed sound herd has become of sufficient size the tuberculous herd can be eliminated by slaughter under inspection for beef.

Group II.

1. The reacting animals should be separated from the non-reacting ones and kept constantly apart from them at pasture, in yard and in stable.

(*a*) *Pastures*—The reactors should be kept in a separate pasture. This pasture should be some distance from the other or so fenced that it will be impossible for the infected and non-infected animals to get their heads together.

(*b*) *Water*—When possible to provide otherwise reacting cattle should not be watered at running streams which afterwards flow directly through fields occupied by sound cattle. The water from a drinking trough used by infected animals should not be allowed to flow into stables, fields or yards occupied by sound animals.

(*c*) *Stable*—Reacting cattle should be kept in barns or stables entirely separate from the ones occupied by the sound animals.

2. Calves of the reacting cows should be removed from their dams immediately after birth. Milk fed these calves must be from healthy cows, otherwise, it must be properly pasteurized. These calves should not come in contact in any way with the reacting animals.

3. The non-reacting animals should be tested with tuberculin in six months, and when reactors are found at the first six months, or any subsequent test, the others should be re-tested not more than six months later. When there are no more reactors

at the six months' test, annual tests should thereafter be made. All reacting animals should at once be separated from the new herd and the stables which they have occupied thoroughly disinfected.

4. The milk of the reacting animals may be pasteurized and used.

5. Any reacting animal which develops clinical symptoms of tuberculosis should be promptly slaughtered.

6. An animal that has once reacted to tuberculin should under no circumstances be placed in the sound herd.

7. As soon as the sound herd had become well established, infected animals should be slaughtered, under proper inspection.

Group III.

Herds that come within this group should be dealt with either as in Group II., where the herd is separated, or as in Group I., where all of the animals are considered as suspicious and an entirely new herd developed from the offspring.

General Precautions.

In ALL cases animals that show clinical evidence of the disease should be promptly eliminated. They should be destroyed if the disease is evidently far advanced, if not, they may be slaughtered for food under proper inspection.

All milk from tuberculous cows that is used for food purposes should be thoroughly pasteurized. This means that it must be heated sufficiently to kill or to render harmless, any tubercle bacilli that may be present in it. For this, it is necessary to heat the milk for twenty minutes at 149 degrees Fahrenheit, or for five minutes at 176 degrees Fahrenheit. It is important that pails or other utensils used in carrying the unpasteurized milk should not be used, unless previously sterilized, for storing the milk after it is pasteurized.

When diseased animals are found, the stables from which they are taken should be thoroughly cleansed and disinfected. To accomplish this, all litter should be removed; floors, walls and ceilings carefully swept and the floors, together with the mangers and gutters, thoroughly scrubbed with soap and water. Thorough cleaning before the application of the disinfectant, cannot be too strongly emphasized. After cleansing, the disinfectant should be applied. A five per cent. (5%) solution of carbolic acid, a

1-1,000 solution of corrosive sublimate or a four per cent. (4%) solution of sulphuric acid may be used.

When stables can be tightly closed, formaldehyde gas properly used is reliable and satisfactory.

If tuberculous cattle have been kept in a small yard the litter should be removed, the surface plowed and the fencing and other fixtures thoroughly cleansed and disinfected.

REPORT OF THE RESOLUTIONS COMMITTEE.

Resolved, That the American Veterinary Medical Association extend a vote of thanks to Senators Warren and Gallinger for the valuable assistance rendered by them to our Legislative Committee in behalf of a bill to promote a more proficient veterinary service in the United States army; and be it further

Resolved, That our Legislative Committee be instructed to use every honorable means to secure the passage of such legislation as is now pending.

Resolved, That this association set aside a sum not to exceed $500, to be used by the Committee on Legislation for the purpose of improving the standing of the army veterinary service.

Whereas, The A. V. M. A., after due consideration of Senate Bill No. 6049, known as the Owens Bill, establishing a Department of Public Health, find that said bill will, if enacted into law, transfer the Bureau of Animal Industry to the said new department; and

Whereas, We are convinced that the object to be obtained would best be obtained by the retention of the Bureau of Animal Industry in the Department of Agriculture, as at present; therefore; be it.

Resolved, That we protest against such proposed transfer, and our Legislative Committee is hereby instructed to use every effort to defeat this or any other bill looking to such transference; and, be it further

Resolved, That said Committee is hereby authorized to expend not to exceed One Thousand ($1,000) Dollars of association money, under proper vouchers, for expenses of such work.

Whereas, Tuberculosis, a contagious disease, is prevalent to a greater or less extent among the cattle of certain sections of the United States, and is, without doubt, spreading to such an extent that it has already become a serious menace to the live stock industry; and

Whereas, Many individual owners, as well as many municipalities and sections, are engaged in its control, if not its extermination, and are seriously handicapped in this work by the almost unrestricted movement of cattle; therefore, be it

Resolved, That it is the opinion of this association that the interstate movement of dairy or breeding cattle should, at the earliest possible moment be prohibited by the United States Department of Agriculture, unless such animals have been proven free from tuberculosis, by being subjected to the tuberculin test made by an inspector of the Bureau of Animal Industry, or by some veterinarian duly authorized by the United States Bureau of Animal Industry.

Resolved, That this Association desires to convey to the various governmental and other bodies, and, especially, to the individuals who have so generously assisted in the work of the International Commission on Bovine Tuberculosis, an expression of its grateful appreciation of their services.

In view of the widespread interest of the veterinarians of the Pacific slope in this, the forty-seventh annual meeting, held in San Francisco; in view of the magnificent hospitality they have accorded to attending members and visitors, and, particularly, the thoughtful and splendid entertainment of our ladies; and in view of the general and personal goodfellowship, as well as the professional uplift promoted, be it

Resolved, That we voice our appreciation of the many, yes, limitless, provisions made for our comfort and pleasure, and assure the Committee on Local Arrangements that we will ever cherish the memory of our visit to the Pacific slope and the City of San Francisco because of their unselfish and untiring labors.

Whereas, we have learned with regret of the misfortune of our colleague and ex-president, Dr. M. E. Knowles, through the loss of his beautiful home and contents, which included a large veterinary library and all of the costly decorations and treasured keepsakes accumulated throughout the years; be it

Resolved, That we extend to our fellow member and his family our sympathy in this great personal loss.

G. H. ROBERTS, Chairman.
S. STEWART.
CHAS. G. LAMB.
A. S. COOLEY.
C. D. MCGILVRAY.

ELECTION OF OFFICERS.

The election of officers resulted as follows:

President—George H. Glover, Fort Collins, Colorado.

Vice-Presidents—R. W. Ellis, New York, N. Y.; W. F. Egan, San Francisco, California; A. S. Cooley, Cleveland, Ohio; A. F. Kinsley, Kansas City, Missouri; C. D. McGilvray, Winnipeg, Manitoba.

Secretary—C. J. Marshall, Thirty-ninth street and Woodland avenue, Philadelphia, Pa.

Treasurer—G. R. White, Nashville, Tenn.

PAPERS AND DISCUSSIONS.

At a preliminary meeting (Monday, September 5, at 2 p. m.) of the Association of Veterinary Faculties and Examining Boards of North America, presided over by Dr. Geo. H. Glover, a paper was presented by Dr. W. H. Lyttle, of Pendleton, Ore., on "What Constitutes a Fair Examination to All Applicants"; also a paper by Dr. S. Stewart, of the Kansas City Veterinary College, relating to the same subject, and Dr. W. Horace Hoskins, of Philadelphia, Pa., spoke on the subject, advocating an examination by the Federal government, which would at once admit a man to practice in *any* state and make him eligible for appointment as veterinarian in any branch of the government service. An interesting discussion followed.

The first paper presented at the regular meeting, Tuesday, September 6, was "Recent Veterinary Literature, Especially That Available to English-Speaking Veterinarians," by Dr. P. A. Fish, Ithaca, N. Y.

This was followed by "The Number of Semesters Which Should Constitute a College Course in Veterinary Medicine," by Dr. S. B. Nelson, Spokane, Wash.

Dr. Otto G. Noock, Reading, Pa., then presented his paper on "Veterinary Jurisprudence," which was followed by Dr. Geo. H. Glover, of Fort Collins, Col., on "Uniformity in Degrees and Matriculation Requirements for Veterinary Colleges." Each of the papers were discussed more or less at length.

The first paper presented on the morning of the second day, September 7, at the *Tuberculosis Session* (following the report of the Committee on Diseases), was "Open Air Experiments With Tuberculous Cattle," by Dr. J. G. Rutherford, Ottawa.

Canada, a very valuable contribution to the literature on this most important subject because it deals with clinical facts and not theories.

This was followed by another valuable paper dealing with the "Immunization of Cattle Against Tuberculosis," by Drs. J. R. Mohler and E. C. Schroeder, of Washington, D. C.

Dr. M. H. Reynolds, St. Paul, Minn., then presented a most excellent paper on "Legislation on Bovine Tuberculosis," which was discussed at some length by Drs. Rutherford, Nelson and McNair.

This session was closed by Dr. C. M. Haring's paper, Berkeley, Cal., on "Bovine Tuberculosis Investigations at the University of California Farm."

At 2 p.m., the *Medical Division* assembled, the opening paper being presented by Dr. F. F. Brown, Kansas City, Mo., on "The Application of Medical Agents to Disease." The doctor was followed by Dr. Herbert F. Palmer, Chicago, Ill., on "Nuclein."

Dr. D. B. Clark, Madison, Wis., then presented an interesting paper on "Johne's Disease," passing plaster casts showing folds in small intestines among the audience.

"Bursatee" was then presented by Dr. C. L. Roadhouse, Berkeley, Cal., and followed by "Experiments With the Intradermal Test for Tuberculosis in Cattle," by Drs. Archibald R. Ward, Berkeley, and Geo. S. Baker, San Francisco, Cal., Dr. Baker presenting the paper.

The last paper presented at this session was "A Nation's Loss, a Profession's Tribute to Fallen Leaders," by Dr. W. Horace Hoskins, Philadelphia, Pa., being a beautiful tribute to some members of the profession whose memories will always be dear to us and always prompt a feeling of reverence.

While the papers were being presented at this division in the main assembly hall, the *Pathological Division* was in in session in another room at which Dr. John R. Mohler presented a paper on "The Diagnosis of Glanders by Konew's Precipation Reaction," and Dr. B. F. Kaupp, Fort Collins, Col., on "Some Conditions Which Affect Phagocytosis."

Dr. S. B. Nelson, Spokane, Wash., opened the *Milk and Milk Hygiene Session* in the evening by presenting a paper on "The Practicability of Securing Wholesome Dairy Products," which provoked some discussion.

The paper of Dr. C. A. Dukes (M.D.), President of the Oakland Board of Health, entitled "The Necessity of Proper

Transportation in the Production of a Sanitary Milk Supply," was then read by one of the members, the author not being present.

On Thursday morning, September 8, Dr. L. A. Merillat, Chicago, Ill., opened the *Surgical Session* by an address on "The Present Status of Animal Surgery in America," which was one of the finest extemporaneous addresses the members of the association have been treated to in some time, and one they will not soon forget.

Dr. Chas. G. Lamb then read Dr. Geo. R. White's paper on "The Surgical Restraint of Animals," Dr. White's voice having failed him through a cold in the throat.

This was followed by a paper on "Anaesthetics," by Dr. R. T. Whittlesey, Los Angeles, Cal.

Dr. O. A. Longley, Fresno, Cal., then presented a paper on "The Evolution of Antisepsis From a Surgical Standpoint."

"Veterinary Dentistry" was next presented by Dr. James Robertson, Chicago, Ill., followed by "Lameness of Horses," by Dr. Joseph Hughes, of Chicago.

"Modern Obstetrics in Animals," by Dr. J. H. Blattenberg, Lima, Ohio, followed.

"Surgical Variations in California," was presented by Dr. F. H. McNair, Berkeley, Cal., and the session was closed with the paper on "Canine Distempers," by Dr. A. V. Hall, San Francisco, Cal.; and it would be difficult to assemble into a program, or to conceive of a group of papers of more practical value to veterinarians than those presented at the San Francisco meeting.

THE CLINIC.

The Clinic, which was conducted by Dr. George White, Nashville, Tenn., was held in Dr. William F. Egan's branch hospital, 3250 Webster street, on Friday, September 9, when thirty-eight (38) operations were performed; a full account of which, will be reported in the next issue of the REVIEW with the *results*, which could not be given in this issue as sufficient time had not elapsed at this writing, and after all, it is the *results* that make the report of any value. The splendid location of the hospital, which is on a promontory overlooking the "Golden Gate," and the ideal weather, should be strong factors in the patients' favor.

THE BANQUET.

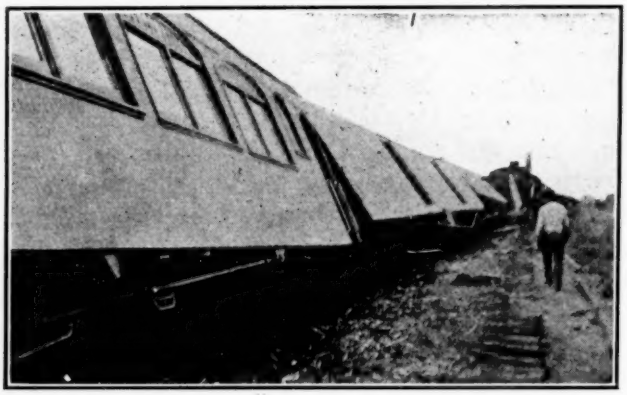
The banquet was held in the beautiful Gold Room of the Palace Hotel on the evening of September 8. The menu, a pretty feature of which being that it consisted entirely of native products, was excellent; California fruit, flowers and wine were in profusion, making the setting superb, and causing a sense of the whole-souled hospitality, characteristic of the people of the "Golden West," to pervade the very atmosphere.

At the close of the courses, President-elect Dr. Geo. H. Glover, in the capacity of toastmaster, called upon the following speakers in the order named to respond to the respective toasts: "California," Congressman, Julius Kahn; "The Ladies," Dr. W. E. D. Morrison, Los Angeles; "The Doctors," Mrs. A. T. Kinsley, Kansas City; "The Far North," Dr. E. A. A. Grange, Toronto, Canada; "The Far East," Dr. R. W. Ellis, New York; "The Far West," Dr. S. B. Nelson, Spokane; "The Bureau of Animal Industry," Dr. A. D. Melvin, Washington, D. C.; "Canada," Dr. J. G. Rutherford, Ottawa, Canada; "The Practice of Veterinary Medicine," Dr. L. A. Merillat, Chicago; "Veterinary Progress In California," Dr. R. A. Archibald, Oakland. Other toasts, responses to which were not made, through the absence of the parties to whom assigned, were, "The Veterinarian of the Future," assigned to Dr. J. C. Norton; "The Far South," assigned to Dr. W. H. Dalrymple, and "Veterinary Education," assigned to Dr. David S. White.

Out of the usual order of A. V. M. A. banquets were songs and recitations by professional talent interspersed between the addresses, which were much enjoyed. The most unique and at once the most pleasing *new* feature, however, was the response to the toast "The Doctors," from Mrs. Kinsley, whose thorough self-possession, perfect delivery and indulgence in little witticisms disclosed to her auditors the fact that it was not her maiden public address, even though a new feature at an A. V. M. A. banquet; and is an initiative toward making the ladies a *part of* the banquet rather than *visitors at* it. Finally as the midnight hour was approaching, Toastmaster Glover, who, by the way, robbed the world of a good comedian when he became a veterinarian, and who had contributed very largely to the evening's enjoyment in his pleasing announcements of the several speakers, declared the entertainment ended, and brought to a close one of the most enjoyable occasions ever participated in by an A. V. M. A. gathering.

The Trip West on the American Veterinary Special.

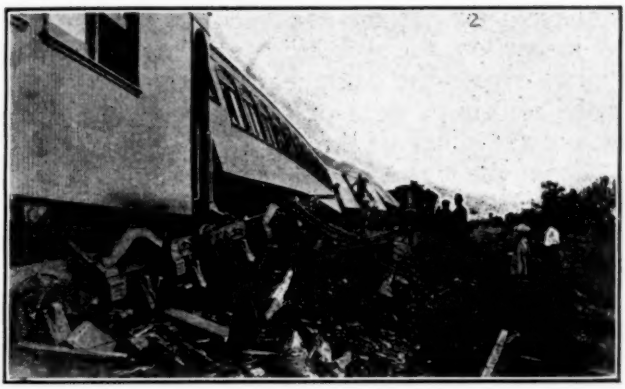
The American Veterinary Special cars, as per schedule, published in the August number of the Review, left Chicago at 6.30 p. m., August 30th, with a merry party of A. V. M. A. conventionists, consisting of members of the association, their wives, friends and visiting veterinarians. Night closed around it as it proceeded through the state of Wisconsin and entered Minnesota, arriving at St. Paul at 7.20 a. m. of the 31st. A little change from the routine of train travel was indulged in at that place by the party leaving the train and going up into the heart of the city for breakfast, which was had in "The Chapel," a breakfast room in a large restaurant built to represent a chapel. The picturesque appearance of the place, and the excellence of the food, well repaid the party for the walk. The train proceeded out of St. Paul at 9.30 a. m. Some of the party motored over to Minneapolis as guests of Dr. Cotton (who met the "special" at St. Paul), crossed the Mississippi River and joined the party again at the latter place. The train continued to speed along the Mississippi, through the great state of Minnesota, with its



SHOWING PASSENGER COACH FROM WHICH PASSENGERS CRAWLED OUT ON OPPOSITE SIDE AND TWO OVER-TURNED BAGGAGE CARS CONTAINING THE PARTY'S TRUNKS; ALSO WRECKED TENDER AND LOCOMOTIVE IN THE DISTANCE.

miles upon miles of wheat fields until late in the afternoon, when the party found themselves at Fargo, North Dakota. All during the remainder of the day, the train sped through the latter state at fifty miles an hour, revealing its importance to those observing

it for the first time by its vastness and the fertility of its soil, as evidenced by the wheat fields which reached far out of sight in either direction and still continued to stretch beside the fleeting train when night closed in around it; the "Bad Lands" being passed through during the night. In the early morning of Sep-



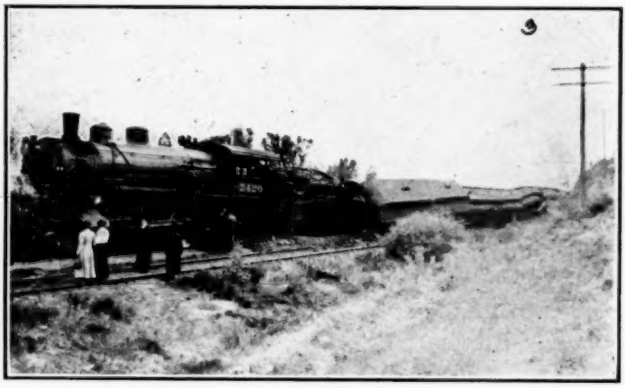
SHOWING REAR END OF OVERTURNED PASSENGER COACH AND FRONT END OF FIRST CAR NOT UPSET; ALSO TRUCKS WRENCHED FROM BENEATH FORWARD CARS AND BENT TRACK-RAIL.

tember 1st the border line of Montana was crossed, and the train had traversed about sixty miles of its territory, when at 5.20, while running at about thirty-five miles an hour, following the many bends of the Yellowstone River, it stopped so suddenly as to give the impression that it had come in contact with a mountain, or something equally resistent. The sleeping travelers, thus suddenly awakened, got hurriedly out of their berths to learn the cause of this sudden arrest in their journey, and found themselves to have been suddenly transformed into heroes of a train-wreck in the wilderness of Montana. One of the two locomotives used to pull the train up the heavy grade, two baggage cars and a passenger coach were found to be derailed, wrecked and partly overturned. The occupants of the passenger coach crawled out of the windows which laid over close to the ground.

The trucks from the these cars had been wrenched from beneath them and laid crosswise of the tracks which had been forced off the ties laterally to the right.

A prayer of thanksgiving involuntarily escaped from the lips of everyone as they learned of the extent of the wreck, and at

the same time realized that not a single person was so much as scratched. This realization had the effect of putting the party in an hilarious frame of mind, and they immediately determined to enjoy to the full, what time was placed at their disposal through the delay necessary to effect the requisite repairs. About the time that all had inspected the wreck, some viewing it from a nearby hill from which they could look down upon it, as well as a nearby inspection, the wrecking train had arrived with men and material to repair the damage; the first step of which was to remove the uninjured part of the train (which included the three Pullmans and diner of the A. V. M. A. party), about five miles back from the scene of the wreck where they were left



SHOWING SECOND LOCOMOTIVE WITH DERAILED TENDER AND TOPS OF OVERTURNED CARS BEHIND BANK.

until the repair work was completed. As soon as the cars had been thus placed, the party left them and could be seen in little groups crossing the plains, picking their way among the cactus and sage bushes, which seemed to be about all there was to sustain the range horses, a band of which was soon encountered, and appeared to be in remarkably good condition, notwithstanding. Off in the distance could be seen a very high hill formed of a sort of soft shaling stone, which seemed to be the goal of the "tenderfeet," who were not content until they had reached its summit, from which they beheld a view of the surrounding country for twenty-five miles in every direction, uninterrupted by house or tree, which it will be difficult for them to forget, and commanded a view of the Yellowstone River for nearly that

length. In the incredibly short time of seven and a half hours, the bank into which the cars were forced, was dug away, new tracks laid off from the main line past the wrecked cars, and the train (leaving them behind) proceeded along the Yellowstone and soon got out of the waste land into a more fertile part of the state, towards Miles City, reaching an extensive sheep raising district, and Fort Kehoe, where the U. S. Government raises horses for army purposes. Friday, September 2d, found the special running along the Flathead River, reaching Paradise about eleven a. m., with snow-capped mountains in the distance and farming going on in the sun-kissed valley below. An elevation of more than five thousand feet above sea level had now been reached, and the descension on the western slope of the "Rockies" was begun, and the rivers were noticed to be running west toward the Pacific. Thompson Falls was reached at twelve noon, and as the sun descended the mountain ranges were left behind, and the train ran into the flatlands of Idaho (a small corner of which was traversed), pausing for a time at the town of Sand Point, that state, and finally reaching Spokane, Washington, about 4.30 p. m., where the party was welcomed by Dr. S. B. Nelson, and Mr. R. J. Maclean, Secretary of the Spokane Chamber of Commerce and escorted to the Chamber by those gentlemen, where each lady and gentleman of the party was invested with a badge of welcome, invited to register in the visitors' book, and allowed to roam about the building inspecting the splendid exhibits of fruit, vegetables and grain for a time, when they were taken in "special" electric cars over the city; the beauty and refinement of which, caused no little comment. At the conclusion of the car ride a luncheon was served in a handsomely appointed restaurant, and Mr. Maclean, acting as host in behalf of his city, called upon Drs. Hoskins, Rutherford, Lyman, Brenton and Winchester, for a few remarks. As the last speaker finished, but seventeen minutes remained in which to reach the train; where further evidence of the welcome and good-fellowship accorded by Dr. Nelson's city awaited the party, in the form of a large basket of fruit for each individual, and a box of flowers for each of the ladies. The following forenoon found the party alighting from the train at Seattle, where the President of the Chamber of Commerce of that city and a number of Seattle veterinarians awaited them with a large number of automobiles in which they were conveyed all over that remarkable city of a quarter of a century and-

taken to the Arctic Club, whose building is a marvel of massive beauty, for luncheon. Here again speaking followed the repast, in which Drs. Hoskins, Rutherford and several Washington State veterinarians participated. A walk about the city, visiting some of its stores, occupied the rest of the time until 4.10 p. m., when the train proceeded, reaching Portland, Oregon, at midnight; but many were sufficiently enthusiastic to remain up and take a run into the city, whose ample illumination afforded them an opportunity to get some idea of its character. At 1.30 a. m., those that were out re-entered the cars to begin the last section of the trip. On awakening on Sunday morning, September 4th, the party on looking from their windows found themselves traversing the fertile lands of Oregon, reaching Ashland late in the afternoon, where a few minutes' stop was taken advantage of, and the members of the party descended from the train and indulged themselves in a little walk, fresh cider and luscious plums. On leaving Ashland they suddenly found themselves *again* ascending; this time climbing the Siskiyou Mountains, heavily wooded, green and very steep. Hitherto the special had trailed its way through mountains by creeping between the elevations turning and twisting along the banks of rivers; but with the Siskiyou, it was a case of climbing in the full sense of the word; and it is doubtful that any member of that party will ever forget the winding back and forth and redoubling on itself that that train with two locomotives did, as it wound its way up the side of the mountain, going along declivitous ledges and crossing trestles over chasms, the bottoms of which were hundreds of feet below, until it had reached the top, at an elevation of 4,125 feet above sea level; then gradually descended on the other side, crossing the state line into California just as night closed in, enveloping the speeding train in darkness. The dawn of the last day on board the train (Monday, the 5th), which had been the home of the party for a week, found them regretting the thought of parting from each other, and seemingly not suffering in the least from fatigue, as their train passed through the beautiful farm lands of California, cutting down through the centre of the State, with cattle, horses and mules in great numbers grazing upon either side, until Bernicia was reached, where the train, with its two immense mountain-climbing locomotives, was run upon the deck of the "Solano," the largest ferryboat in the world; having an area of one acre, which carried the train across Carquinez Straits, a distance of one mile,

to Porta Costa; from which point, it again proceeded by rail to Oakland, where its party bade good-bye to the Pullmans and their faithful porters, which had been with them for seven days, traveling over three different railroads, *i. e.*, the Burlington, the Northern Pacific, and finally the Southern Pacific, crossing San Francisco Bay in a large ferryboat, they found themselves in the beautiful city of their goal, San Francisco.

SOCIAL FEATURES.

On the morning of the opening of the convention the ladies and visitors, as has been customary for a number of years, were in attendance at the opening exercises and immediately after luncheon started out to see San Francisco as guests of the veterinarians of California, whose entertainment committee had provided a program of entertainment that promised to keep them busy to carry out. This committee in turn delegated one of its members, Dr. P. H. Browning, of San Jose, to take complete charge of the ladies and friends. The committee explained that Dr. Browning was thus singled out for this special work because he is the best looking veterinarian on the Pacific coast, and it requires but a glance at that tall, well-set-up gentleman to convince one of the wisdom of the committee in their selection. But that is not the only thing about the doctor that commended him to the position, as he is possessed also of more than an ordinary degree of executive ability; an essential in order to be the success Dr. Browning proved to be *with the ladies.*

On this first afternoon they were taken in automobiles over the resident and business portions of the city, through Golden Gate Park, along Ocean Boulevard to the Cliff House (this being a new one that has replaced the old Cliff House of international fame), and Seal Rocks, to the Sutro Gardens, and finally through the Presidio; bringing them back to the hotel in time to have dinner and dress for the reception that was tendered them, the members of the association and visitors, in the ball-room of the Palace Hotel, where everyone became acquainted, and many were lured upon the floor by the charm of the music. Refreshments were provided in the ante-room and the evening proved to be an enjoyable one.

On the following day the ladies were escorted to Mt. Tamalpais and Big Tree National Park; luncheon being served on the mountain. In the evening they were taken through Chinatown.

The following day (Thursday) a wonderful treat was in store for them in the form of a trans-bay trip, taking in San Francisco Bay, Yerba Buena, United States Naval Training Station, Oakland, Berkeley, University of California, Greek Theatre, Piedmont Gardens, Piedmont Springs, Great Art Gallery, Ostrich Farm and many other attractions, lunching at Piedmont Springs. In the evening they attended the banquet in the Gold Room of the Palace Hotel.

Friday morning at ten o'clock Dr. Browning assembled his ladies in the hotel parlors preparatory to escorting them to stands that the committee had had erected, to witness the parade* of the "Native Sons and Daughters of the Golden West," which proved to be in an admirable location.

Too much praise cannot be given the ladies of California for their unceasing attentions to the visiting ladies during their stay in San Francisco, which they left with a sense of having been truly welcomed.

POST-CONVENTION PLEASURES.

On Friday, September 9, the day following the last day on which the meeting convened, although a very important one for those of its members engaged in general practice (Clinic Day), was the beginning of post-convention pleasure and entertainment for many veterinarians who had been in close attendance at the several sessions during the three previous days and who hoped on this occasion to witness, with their ladies, the parade of the "Native Sons and Daughters of the Golden West," in commemoration of the admission of California into the Union as a state (September 9 being "Admission Day"), and still attend the clinic. Most of those who witnessed the celebration, however, were disappointed in their hope to attend the clinic as the parade occupied most of the day, and the difficulty in street traffic incident upon the same made it impossible for them to reach the clinic after the parade had passed and was returning over considerable of the ground it had originally traversed. But they can console themselves in the fact that they have witnessed one of the most beautiful spectacles that it will be their privilege to behold in a long time again, if ever. Ladies and gentlemen of society in their loyalty to the state of their birth, walking hour after hour through the streets of San Francisco, on one of the

* See under head of Post Convention Pleasures on page 138.

rare occasions in that city, *a hot day,* but, as we were informed, a characteristic "ninth of September." The beautiful color effects produced by the contrasts in the costumes of the ladies of the different "Parlors" (as the various lodges of the order are designated), was most striking. The custom being to have dress, hat and parasol alike, and then a floral decoration on each. As a striking example, picture fifty ladies in jet-black dresses, black hats and black parasols, with each of these parts of their fifty costumes tastefully decorated with California poppies; another fifty in pure white, with some richly colored floral decoration in contrast; and, if you can conceive of the beauty of the coloring in California flowers, you will get *some* idea at least, of the ladies' part in the celebration of "Admission Day.'

The men were equally tasteful in their dress. Besides which, an Indian village, and many other "floats," in addition to the military organizations, etc. Many beautiful horses filled the streets, forming a conspicuous feature of the parade; both under the saddle and attached to carriages drawing the pioneers of the state, and state and city officials. Prominent among the latter, from the standpoint of the A. V. M. A. members, was His Honor Mayor McCarthy, of San Francisco, who had welcomed them so heartily to his city on the opening day of the convention. The evening of that day is one long to be remembered. It was en-carnival, a time of merry-making, in which resident and visitor took part with equal zest, so that those who had absented themselves from the streets for an hour or two at theatre or other place of amusement, returned to find confetti filling the streets and covering the hats and shoulders of pedestrians in a manner to remind one of a recent snow-fall. Late that night and the following day found the members of the convention departing from the convention city for other points of interest. Some to visit relatives or friends in nearby places, others taking the steamer for Seattle, Vancouver and other northern points, while still others (and we believe the greatest number of the original party to hold together), took the coast route to Los Angeles, from which city many enjoyable and instructive side-trips were made to places of interest in southern California. The most extensive and perhaps the most interesting of which was the trip to Catalena Island, a wild mountainous island whose highest peak is about 2,200 feet elevation, lying twenty-seven miles out to sea. This trip was accomplished by electric railway to San Pedro, twenty-two miles from Los Angeles and by

steamer from that port to the island, landing at a cozy little settlement called Avalon, nestled in a cove on the east coast of the island. Aside from this settlement and another small one in the hills, twenty-two miles to the north, the island is uninhabited with the exception of a sheep ranch somewhere in its centre beyond the mountains visible from its east coast, on which 40,000 sheep are kept. These, and about 20,000 wild mountain goats practically comprise the animals living on the island, which is twenty-two miles long and has an average width of seven miles. Another interesting and instructive feature in connection with the trip to Catalena Island, are the submarine gardens and seal rocks. These are seen by going in glass-bottom steamboats along the east coast of the island, where, looking down through the glass bottom of the boat, beautiful fish of various colors (among others the largest and most beautiful gold fish in the world), may be seen sporting about in shady submarine parks, composed principally of a form of sea weed called "kelp," from which iodine is made. Then passing on into deeper water, and along a more rugged portion of the coast until the seal rocks were reached; where great numbers of seals could be seen reclining in their natural habitat, and the wild goats climbing among the rugged cliffs. Seals also played about the fishing pier at Avalon, where they had become quite tame. On the end of the pier a fish recently caught was hanging on the scales, which recorded the enormous weight of two hundred and thirty-one (231) pounds. Our surprised comment was answered by the information that one weighing three hundred and ten (310) pounds had been caught the day previous. They were a species of sea bass. We had become somewhat prepared for surprises on reaching the island, as when we were about fifteen miles out to sea on our trip down we had had the unusual privilege of seeing a large whale, who seemed to know the steamer contained passengers not used to the Pacific, as he took particular pains to show himself well, first blowing to attract attention to his location, then showing his tail, and finally the greater part of his back on more than one occasion as he traveled parallel with our steamer, the "Empress," for a considerable distance.

As the steamer was about to leave the pier for the return trip to San Pedro, boys and young men in row boats suddenly swarmed about it importuning the passengers to throw coins into the harbor; for which they dived with a dexterity that could only be acquired by long practice; as the coins would scarcely descend

two feet below the surface in many instances before the boys would have secured them; when they would quickly return to their boat, deposit them upon the seat and call for more; and many dollars in nickels and dimes were transferred from the "Empress" to the row boats before she steamed out of port. While the delights of this trip were being experienced by some, others were beholding with wonder the extent of the Los Angeles oil district as they passed on to Echo and Elysian Parks, through the gateway to San Fernando Valley and out into the beautiful Cahuenga Valley with its orange, lemon, fig, olive and walnut groves, and some of the most beautiful suburban homes, with their tropical grounds and palm trees; the bungalows covered with trailing bouconvilla, roses and scarlet geraniums found in southern California. Others were walking over the grounds of the National Soldiers' Home at Sawtelle, with its beautiful tropical park of seven hundred (700) acres, massive barracks and numerous government buildings, making a pleasant home for three thousand (3,000) war veterans; aptly termed "Old People's Paradise." And still others are at Santa Monica enjoying the pleaures of the two miles of boulevard and beach of this city by the sea, in a camera obscura. No one left southern California without visiting Port Los Angeles with its pier, which is said to be the largest pleasure and fishing wharf in the world, and lunching at Playa Del Rey, a few miles below in the auditorium dining room overlooking the sea, nor without seeing the wonderful pool at Redondo Beach, whose capacity is one hundred and forty-eight thousand (148,000) gallons of water, and has all the modern appointments.

While some were enjoying the plunge here, others were gathering moon stones on Moon Stone Beach, a few miles away; and many pretty trophies were picked up on the very edge of the sea; ofttimes at the expense of a wetting, as the tide stealthily overtook the treasure searchers. Long Beach, twenty-two (22) miles from Los Angeles, seems to be the favorite spot for surf bathing, and many of our conventionists bring home with them a pleasant memory of the caressing waves under an ideal sky to be followed by the joys of an indoor plunge before dressing.

And so we might go on enumerating, Ocean Park, Naples and many others, as southern California seems to pride itself on its beaches, and has spent millions of dollars to improve them without any prospect or expectation of direct money returns; but to pass without referring to the Venice of America, would

be inexcusable. This is one of the most completely equipped amusement and pleasure resorts on the Pacific Coast; with its immense concrete canals with gondolas and true Venetian arched driveways; Venetian Villa City, colonnades and arcades. It also has a miniature railway, composed of a real locomotive in miniature, and a long train of open cars that take you around the city, going over the canals on arched stone bridges.

Venice also has a twenty-thousand-dollar ($20,000) aquarium, an Oriental exhibit, a scenic railway, bath houses and all the amusement making et ceteras of an up-to-date coast resort. And few left Los Angeles without having visited Pasadena, seeing the miles of orange groves lying around that most beautiful little city and visiting Cawston's Ostrich Farm, the largest in California, one hundred and fifty (150) birds are kept near the plant, where the feathers are prepared for sale, and a thousand on the farm some distance away; or without having gone over to San Gabriel Mission, ten miles east of Los Angeles, founded by Spanish priests in 1771, in which services are still held. Its primitiveness is in marked contrast with the churches of to-day, when you consider that the present building was erected in 1790; and some of the pictures of the Apostles and other saints which adorn the walls, date from that time. We cannot attempt to tell of all the places visited by our members while in the southland; for while some were visiting surrounding cities others were exploring the wonders of the City of Los Angeles itself; plunging into the "Bimini Baths;" known also as the "Velvet" bath from the softness and natural warmth of the water which flows from a great depth in the earth. The owners having bored for oil without success until nearly ruined, when they struck this ideal water for bathing purposes, constructed the baths and have made millions of dollars from them. Also in the city proper, of the three world-renowned Chinatowns of New York, San Francisco and Los Angeles, the latter city has the largest. In it at night members of our convention visited Chinese homes, saw large Chinese stores, Chinese boarding houses, opium and gambling dens, and entered a Chinese Masonic chamber and were astounded at the beauty of its altar. The foregoing will give our readers an idea of *some* of the things seen after the close of the convention, the rest we will leave to their imagination, and for those of their friends who were of the party to relate to them.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION.

Lake City made good as a convention city for the semi-annual meeting of the above association, which held a two days' session there on Wednesday and Thursday, July 13 and 14, 1910. The weather was ideal and no effort was spared by the local citizens to make the stay of the veterinarians one of pleasure. Forty or more doctors and their wives were in attendance and enjoyed themselves thoroughly.

The opening session was called to order in the City building at 2 p. m., and the business transacted in the following order: Reading of the minutes, Report of the Board of Directors meeting at Dr. Cotton's office; accepted. Election of new members as follows: J. J. Hughes, Glencoe; J. H. Kirtzhofer, Glenwood; Wm. A. Getty, Fairmont; Wm. L. Dockstader, Lyle; F. P. Burke, Madelia; F. G. Mason, Hibbing; R. C. Williams, Stillwater, and W. F. Flanery, St. Charles.

Voted to refer the matter of resolution on the death of Dr. J. W. Gould, to the Board of Directors, with instructions to draft same.

Moved by Dr. W. L. Beebe and seconded by Dr. W. Amos, that a committee be appointed to draft a code of ethics and report same to society at the next meeting for endorsement. Carried. Committee—**Beebe, Mack, Amos.**

Paper by Dr. E. A. Sotaaen. Subject, "Extra Uterine Pregnancy in Mare." Discussed by Drs. Lees, Hay, Lyons, Lyford and Scott.

Paper by Dr. C. C. Lyford. Subject, "String-halt." Showed great study. Discussed by Drs. Lees, J. N. Gould, Cotton and Hay.

Paper by Dr. E. A. Sotaaen. Report of a case of "Torsion of the uterus."

At 6.30 o'clock in the evening the Lake City Commercial Club tendered the veterinarians and their wives an informal reception and collation at Woodman Hall. More than one hundred guests partook of a substantial luncheon, after which a program of toasts and music with E. R. Paterick as toastmaster formed the evening's entertainment. C. A. Hubbard, president of the Commercial Club, made a few introductory remarks, after which City Attorney Wesley Kinney, in the absence of Mayor Foley, gave the address of welcome. The response was given

by Dr. G. Ed. Leech, of Winona. The remainder of the program included toasts by Dr. G. S. Todd, Dr. C. C. Lyford, of Minneapolis, M. J. O. Laughlin, Dr. J. C. Adams and R. D. Underwood. Musical numbers were rendered by Mrs. James Scott, Miss Nona Jenkins, Chas. Myhre, and Miss Marguerite Williams. The program closed with a reading of a selection from "David Harum" by Mrs. A. W. Corwin. The visitors were entertained Thursday morning with an auto ride about the city and through the nursery grounds. In the afternoon they were treated to a launch ride on Lake Pipin, which was tendered them by the Yacht Club in the launches "Idalia III.," "Florence" and "Marian." They were much impressed with the scenic beauty of Lake City and vicinity and were profuse in their complimentary remarks.

One of the features of the meeting was the tubercular exhibit, which the bacteriological department of the Live Stock Sanitary Board had on display. The display consisted of sections of diseased meat under glass, showing the tubercular affected organs of cows, pigs and chickens.

At the open meeting held Thursday evening at the City Building, tuberculosis was the general subject discussed. Dr. J. P. Anderson presided. Dr. J. C. Adams gave a brief talk at the opening of the program, after which Dr. M. H. Reynolds read a paper on "Bovine Tuberculosis as a Public Welfare Problem." He emphasized the importance of interesting the public in the problem and declared that public sentiment must be aroused before it could be eradicated. He spoke of the magnitude of the task which confronted the veterinarians of this state in their work of inspecting dairy herds and applying the tuberculin test.

"A competent organization and a feasible policy must go together," declared the doctor, "if the disease is to be eradicated."

Miss Anna Stevenson played a piano solo, after which Dr. J. J. Fretz, B. A. I. at Winona, discussed the subject of "meat inspection." He condemned local slaughter houses, declaring them to be unclean, unsanitary, and hot-beds for disease. He urged the erection of a municipal abattoir, to which all butchers could have access and which could be kept clean and sanitary. A solo by Chas. Myhre was followed by an illustrated lecture by Dr. G. Ed. Leech. The views consisted of live stock, barns and cuts of meat, showing the contrast between clean, healthy and sanitary conditions and the reverse. The next speaker was Dr. W. L. Beebe, who made a brief talk on "Milk Transmissibility."

The last musical number was a violin solo by Miss Marguerite Williams with piano accompaniment by Miss Florence Hubbard, after which Dr. E. H. Bayley made a few remarks.

A poem was read by Mrs. G. Ed. Leech, "A Toast to Men." At the conclusion the association by a rising vote passed unanimously a resolution of thanks to the citizens of Lake City for the courteous treatment and delightful entertainment afforded the veterinarians during their sojourn in the city.

RESOLUTIONS ON DEATH OF J. M. GOULD.

Whereas, Our attention has been called to the fact that the Divine Ruler of the Universe has again reduced our ranks by death and has taken from among us our esteemed and honored member, Dr. J. W. Gould, and,

Whereas, Those of us who knew him best will miss him most as an adviser, counsellor and professional brother; be it

Resolved, That we express our sympathy for this loss and bereavement by tendering to the immediate family and relations of Dr. J. W. Gould, our feelings of sympathy and condolence in this, their hour of grief; and be it also

Resolved, That a copy of this resolution be sent to members of the immediate family and also be spread upon the records of this society.

DR. J. P. ANDERSON.
DR. C. S. SHORE.
DR. C. A. MACK.
DR. G. ED. LEECH.

The meeting was then declared adjourned.

MAINE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of this association was held at the Preble House, Portland, on July 13, 1910, with President Joly in the chair, and the following members present: Drs. F. L. Russell, C. W. Watson, A. Joly, C. W. Purcell, C. H. McGillicudy, H. L. Stevens, E. E. Russell, W. H. Lynch, W. L. Mebane, Geo. F. Wescott and C. L. Blakely.

Dr. H. H. Newcomb, of New York, was present as a visitor, representing C. Bischoff & Co., American agents for Von Behr-

ing's "Bovovaccine," which is being used quite extensively in Maine. Drs. M. E. Mattox and C. F. French were also present as visitors, both having successfully passed the State Board of Veterinary Registration Examiners.

The Executive Committee reported favorably on the application of Dr. B. L. Pratt, of Caribou, for membership.

Letters were read from Drs. Salley and Lord, regretting their inability to be present.

The association listened to a very able paper by Dr. W. H. Lynch, of Portland, entitled "Monoliths of Comparative Medicine," with special reference to serotherapy. Considerable discussion followed. Dr. C. W. Watson related his experience with a French hog cholera serum.

Dr. M. E. Mattox spoke of his work in the University of Pennsylvania laboratory in preparation of antitoxin.

A communication was read from Dr. R. P. Leyman, asking the association to elect a representative to the American Veterinary Medical Association meeting at San Francisco in September.

After considerable discussion, the meeting voted to meet with Dr. Joly in October at Waterville. Papers to be read by Drs. Salley, Robinson and H. L. Stevens.

Meeting adjourned at an early hour.

C. L. BLAKELY, Secretary.

YORK COUNTY VETERINARY MEDICAL SOCIETY.

The quarterly meeting of this society was held in the parlors of the National Hotel, York, Pa., on September 6, 1910. The papers of Drs. W. L. Herbert and E. S. Bansticker on "Colic In Horses" and "Pyemic Arthritis," respectively, were of unusual interest and provoked lengthy discussions. A number of dogs having recently died in the City of York, apparently from arsenical and strychnine poisoning, a discussion on poisoning by those alkaloids was of general interest. The members also gave considerable time to the discussion of rabies, tetanus in horses and the use of anti-tetanic serum in acute cases, and the testing of cattle for tuberculosis, before they finally adjourned to meet December 6, 1910.

E. S. BAUSTICKER, Secretary.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alumni Ass'n, N. Y.-A. V. C.....	.....	141 W. 54th St.	J. F. Carey, East Orange, N.J.
American V. M. Ass'n.....	....	.....	C. J. Marshall, Philadelphia.
Arkansas Veterinary Ass'n.....	.....	.....	Horace E. Rice, Little Rock.
Ass'n Médécale Veterinare Française "Laval".....	1st and 3d Thur. of each month	Lec.Room,Laval Un'y,Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo...	Chicago.....	H. A. Smith, Chicago, Ill.
California State V. M. Ass'n.....	.....	San Francisco.	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.....	.....	Ottawa	A. E. James, Ottawa.
Chicago Veterinary Society.....	2d Tues. ea. mo	Chicago	J. M. Parks, Chicago.
Colorado State V. M. Ass'n.....	.....	Denver	M. J. Woodliffe, Denver.
Connecticut V. M. Ass'n.....	1st Tues.Feb. '11	Hartford.. ...	B. K. Dow, Willimantic.
Genesee Valley V. M. Ass'n.....	....	.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	Dec. 21, 22, 1910.	Atlanta.....	P. F. Bahnsen, Americus
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Illinois State V. M. Ass'n.....	.....	.....	J. H. Crawford, Harvard.
Illinois V. M. and Surg. A.....	.....	.....	F. Hockman, Louisville.
Indiana Veterinary Association...	Jan. 11, 12, 1911..	Indianapolis..	E. M. Bronson, Indianapolis
Iowa Veterinary Ass'n.....	.....	.....	H. C. Simpson, Denison.
Kansas State V. M. Ass'n...	Jan. 10, 11, 1911.	Topeka	B. Rogers, Manhattan.
Kentucky V. M. Ass'n.....	.....	Not decided ..	D. A. Piatt, Lexington.
Keystone V. M. Ass'n.....	.....	.....	S. Lockett, Glenolden.
Louisiana State V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n	.....	.....	C. L. Blakely, Augusta.
Maryland State Vet. Society.....	.....	Baltimore.....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	Monthly.....	Boston.....	Wm. T. White, Newtonville.
Michigan State V. M. Ass'n.....	.....	.....	Judson Black, Richmond.
Minnesota State V. M. Ass'n.....	.....	.....	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n....	.....	.....	J. C. Robert, Agricultural Col.
Missouri Valley V. Ass'n.....	Feb , 1911.....	Kansas City..	Hal. C. Simpson, Denison, Ia.
Missouri Vet. Med. Ass'n	.....	.....	D. L. Luckey,
Montana State V. M. A.....	.....	Helena.....	W. S. Swank, Miles City.
Nebraska V. M. Ass'n.....	.....	Grand Island.	H. Jensen, Weeping Water.
New York S. V. M. Soc'y.....	Aug. 1911.....	Brooklyn	H. J. Milks, Owego N. Y.
North Carolina V. M. Ass'n.....	.....	.....	W. G. Chrisman, Raleigh.
North Dakota V. M. Ass'n.....	Jan. 1911.....	Fargo	C. H. Martin, Valley City.
North-Western Ohio V. M. A.....	Feb. and Nov. in each year.	Lima.	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.....	.....	.....	O. V. Brumley, Columbus.
Ohio Soc. of Comparative Med..	Annually	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Oklahoma V. M. Ass'n.....	.....	.....	R. A. Phillips, Oklahoma City
Ontario Vet. Ass'n.....	.....	.....	C. H. Sweetapple, Toronto.
Passaic Co. V. M. Ass'n.....	Call of Chair...	Paterson, N.J.	H. K. Berry, Paterson, N. J.
Pennsylvania State V. M. A.....	.....	.....	F. H. Schneider.
Philippine V. M. A.....	.....	.....	Chas. G. Thomson, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. ea. mo.	Portland, Ore.	Peter Hanson, Portland, Ore.
Province of Quebec V. M. A.....	.....	Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June..	Providence ...	J. S. Pollard, Providence
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.....	Dec. 21, 1910....	Reading.....	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.....	.....	Philadelphia..	B. T. Woodward, Wash'n, D.C
South Dakota V. M. A.....	2d Tues. July '11	Watertown...	S. W. Allen, Watertown.
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. Jy. Oct.	Los Angeles..	A. D. Hubbell, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp..	4th Tues. ea. mo.	407 Ill. Ave....	H. R. Collins, So. St. Joseph
Tennessee Vet. Med. Ass'n.....	.....	.....	A. C. Topmiller, Murfreesboro
Texas V. M. Ass'n.....	Call Exec. Com.	.....	R. P. Marsteller, College Sta.
Twin City V. M. Ass'n.....	2d Thu. ea. mo .	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Vermont Vet. Med. Ass'n	....	....	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta... ..	.....	.....	C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	514—9th St., N. W.....	M. Page Smith, Wash., D.C.
Vet. Ass'n of Manitoba.....	Not stated.....	Winnipeg.....	F. Torrance, Winnipeg.
Vet. Med. Ass'n of N. J.....	.....	.....	W. Herbert Lowe, Paterson.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	W. Reid Blair, N. Y. City.
Veterinary Practitioners' Club....	Monthly	Jersey City ...	A. F. Mount, Jersey City.
Virginia State V. M. Ass'n.....	Jan. 13, 1911.....	Richmond	W. G. Chrisman, Raleigh.
Washington State Col. V. M. A ..	1st & 3d Fri. Eve.	Pullman.....	R. G. McAlister, Pullman.
Washington State V. M. A.....	.....	Seattle.....	J. T. Seely, Seattle.
Western Penn. V. M. Ass'n.....	1st Wed. ea. mo.	Pittsburgh....	F. Weitzell, Allegheny.
Wisconsin Soc. Vet. Grad	Jan., 1911.....	Madison.....	J. P. West, Madison.
York Co. (Pa.) V. M. A.....	.....	York.....	E. S. Bausticker, York, Pa.

PUBLISHERS' DEPARTMENT.

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HAUSSMANN & DUNN CO.'s catalogue is certainly interesting; especially to young veterinarians stocking up with instruments preparatory to commencing practise. Readers will find their address on page 1 (adv. dept.).

ON the lower half of page 1 and also on page 13, are very interesting lists of imported drugs and compounds, full particulars in regard to which can be obtained by dropping a line to Ernst Bischoff & Co., New York, the importers.

ANTI-ITIS is one of the most useful preparations the veterinarian has about the office. It not only meets the immediate need in acute inflammatory conditions, but is a very convenient application in the preparation *for* treatment of many chronic conditions. Address of manufacturers will be found on page 6 (adv. dept.).

LOCAL ANAESTHESIA IN VETERINARY SURGERY is the significant heading of an advertisement that appears on page 10 (adv. dept.) of this issue of the REVIEW. It certainly is an important thing to accomplish, and the drug there advertised seems to fill the bill in that respect.

WRITE WALTER F. SYKES & CO., in regard to TALLIANINE as prepared today. Descriptive matter will be sent you on request, that may contain some valuable suggestions.

AIR-CUSHION PADS, for your own driving horses are indispensable on city pavements. Incidentally show them to your clients.

AMERICAN VETERINARY REVIEW.

NOVEMBER, 1910.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, September 15, 1910.

GALL SICKNESS OF SOUTH AFRICA—ANAPLASMOSIS OF CATTLE.—This second name is proposed by Dr. Arnold Theiler, the well-known government veterinary bacteriologist to the Transvaal. Name of a disease, whose pathology has finally been cleared up by him, which is recorded in the *Journal of Comparative Pathology and Therapeutics* of June, 1910, and which is due to "a protozoon, anaplasma marginale, which invades and destroys the red corpuscles, causing primarily an acute anemia, accompanied by a high fever and, secondly, a degeneration of the larger parenchymatous organs."

What is Anaplasma?

In previous communications made by the author, of experiments made with various blood parasites, piroplasma bigeminum, piroplasma mutans, spirochæte theileri and others, allusions were made to the presence of peculiar coccus-like bodies found on the periphery of red corpuscles, and which were described under the name of "marginal points." By observations and various experiments related in his last article, the author is brought to "no other conclusion than that these marginal points are the cause of a typical disease—a grave anhemia which to a great extent resembles that caused by piroplasma bigeminum—that they stand in no relation to piroplasma bigeminum and that they represent a new genus of protozoon for which the name of Anaplasma is proposed, whose present species is to be called Anaplasma Marginale and the disease Anaplasmosis."

This parasite has always been considered to be of a protozoon nature. Its shape is that of a round or oval body, certainly resembling a coccus. Its multiplication seems to take place by fission. As a rule they are situated on the periphery of the corpuscle, sometimes reaching over the margin; they are also seen more towards the centre of the corpuscle, but not so frequently. They multply rapidly and invade a large percentage of the corporuscles, amounting to about eighty per cent. in severe cases. The blood lesions stand in a certain relation to the number of parasites.

This discovery establishes a distinction among the many different names by which some of the cattle blood diseases of South Africa are known.

* * *

A quite startling fact in the article of Dr. Theiler, is that connected with the literature of Anaplasma Marginale where he demonstrates that this parasite is already well known, if it has not been recognized.

For instance, Smith and Kilbourne in "their studies on Texas fever have noticed them. The peripheral coccus-like bodies which they class as a stage of the cycle of piroplasma bigeminum" were undoubtedly Anaplasma Marginale. And Theiler argues that the term of "Texas fever" is a collective name for two different diseases, caused by two distinct parasties, the one due to piroplasma bigeminum and corresponds to redwater, the other to Anaplasma Marginale, identical with gall sickness."

Again: La Plata Tristeza, due to piroplasma bigeminum, has been studied by Knuth. He also saw peripheral bodies; he met them often. He also considers them as a stage in the cycle of piroplasma bigeminum. But all the facts that he relates correspond to those observed by Theiler, who comes to the conclusion that also, as with the name of Texas fever, must under that of Tristeza be understood two diseases: piroplasmosis and anaplasmosis.

Studying and writing their observations and experiments in Cachectical Piroplasmosis of the Transcaucasus, Luhs and Dschunskowsky attribute it to a small piroplasm, the P. Annulatum; and there peripheral bodies were also detected. For Theiler this form of piroplasmosis of Caucasus has no connection with an infection by P. Annulatum, but represents Anaplasmosis.

Finally, in the Hemoglobinuria of Europe, which is due to P. Bovis if peripheral bodies have been observed, they do not seem to have been described in England or on the Continent.

Following this interesting part referring to the literature of Anaplasma Marginale, the author completes his article by the description of the disease. Its geographic distribution, which tells us that it is found in various parts of the world, North and South America, all over Africa, in the Transvaal, etc., etc. The susceptibility of animals according to breeds, age. The variations of the virulency of certan strains of Anaplasmas. The immunity that follows a recovered attack, which, while it is not complete, shows that the animal has obtained a great resisting power. The length of the incubation varying between twenty-seven and thirty-two days, the recovery and the various forms of the disease. And then there is a minute description of the clinical symptoms which are those of anhemia, to conclude with the pathological anatomy. In relation to the transmission of the disease, it is no doubt by means of the blue tick, Boophilus decoloratus, that it takes place.

There remain yet many points to determine and this discovery will necessitate new inquiries in relation to some diseases upon the nature of which definite conclusions had already been accepted.

* * *

On Bier's Method Again.—Since the time when, in 1908, I related the application in *Veterinary Medicine* of this method, several publications referring to it have made their appearance in the Review and other American printed documents, such as that of Dr. Harger and of Dr. Jensen in the proceedings of the

A. V. M. Association for the years 1908 and 1909. The question, therefore, seems pretty well understood and appreciated by the majority of our readers, who, no doubt, will now and then record in our pages the results of their experience. As after all the subject may yet not be very clear I may be permitted to mention what more recent statements have been advanced here.

First is the opinion of Professor Cadeac, of Lyon, in the *Journal de Zootechnie* where, after giving the history of the whole method, the mode of application, the indications, etc., he says: "The method appears to us as a perfect means to limit infection and to increase the bactericid and phagocytar power of the organism. The new elements thrown in the diseased field are not diseased phagocytes, weakened by the contact of toxines present in the entire organism, as in ordinary infections, where nothing arrests their resorption. They are strong fighters, present in an organism that has remained sound and that nothing has yet debilitated; they possess their maxima of destroying activity. They may be considered as invulnerable. Bier's method reenforces the physiological defensive action of the blood elements and of the serum towards infectious germs and their toxines. It acts like and exaggerates considerably the natural curative process that the organism disposes of towards bacterian infections." What a brilliant plea in favor of the method!

* * *

Let us, however, look at the other side of the medal, at the practical considerations of the learned professor and at the conclusions he draws from it.

After considering the modus operandi and the application of the ligature or bandage with the difficulties and dangers inherent to them, he says: "Evidently such a method is bound yet to remain localized in the hospital of verterinary colleges and private or military infirmeries. And I will add that it will always remains there as purely experimental as it requires too close and too severe watching in veterinary medicine to be of common application. In man, if the constriction is too great, he takes it off to relieve his pans and all complications are avoided. The

dog instinctively may tear it off with his teeth, the horse will struggle, but keep it."

Again: "Anyhow, its indications are more limited than veterinarians may imagine. The circulation cannot be disturbed with impunity without modifying the nutrition. The stagnation of the blood is followed with the throwing out of an exudate which forms an excellent medium of culture for all anaerobic germs; the constricting band, moderately tight, promotes a warm edema whose temperature is kept high only by the permanent arrival of oxygenated blood. The effects of this arrival are felt in parts slightly stretched, which are but little œdematous and beyond which the pressure of the exudate creates a much slower circulation; the tissues then become poor in oxygen, glucose is more abundant, so is also the glycuronic compounds, the toxines and the fermenting matters. And thus is created a medium extremely favorable to the development of all septic germs: Organisms most refractory to these infections are bound to succumb. Therefore, before applying the ligature, the nature of the germs which cultivate in the infectious centres ought to be known. If entirely aerobic, their evolution is arrested and prevented by a long constriction; if anaerobic they find in the warm œdema produced, a media most favorable to their growth and multiplication. In presence of the doubt, the risk of such danger cannot be run."

* * *

Those objections so well presented by Professor Cadeac, some of our collaborators, Professor Harger among them, in the article that he read in 1908 before the National Association mentioned them also. And yet let us show what results have been obtianed by M. M. Lemire and Ductrotoy, two army veterinarians.

In the extensive résumé of their experience they relate the history of 121 cases where Bier's method was resorted to and in which only eighteen failures were noted. The 121 cases and failures are recorded in toto as follows: Four cases of traumatic arthritis with two recoveries and two failures: three cases of

traumatic synovitis, with two recoveries; one plebitis of the saphena vein, recovered; twelve broken knees, with three failures; three punctured wounds of the foot, recovered; two lymphangitis, got well; one cartilaginous quittor also; twelve tendinous sprains with nine failures; one sprain of the fetlock, recovered; one hematic cyst, recovered; nine sore throat also; eighteen cases of pneumonia and pleuro-pneumonia with only one failure, and fifty-four cases of contused or punctured wounds with fifty-two recoveries and but two failures.

All these make a brilliant record to counterbalance the pessimism of Professor Cadeac. It is true, however, that the animals were treated and the results followed in military infirmeries being recorded by army veterinarians.

And now to conclude on this subject let me borrow from the *Revue Generale* a new application of the method, viz.: for the local treatment of rabies infection. The same being taken from the *Centralblatt für Bakteriologie.*

Ferni has said to have obtained good results in the treatment of rabies, a few hours after infection, by the application of an elastic band about the point of inoculation. All the animals treated, twenty-six rats, five rabbits and seven dogs escaped the disease, while all the controls died. According to Ferni the results are better than those that can be expected with cauterization.

Umberto Cano confirms these results in the treatment of rabies in dogs and rabbits. "Bier's hyperhemia is far superior to cauterization with the red iron." The band can be applied even four or five hours after the infection. Placed on between five and twelve hours, eighty-eight per cent. of the animals do not contract the disease, while the best results of the cauterization are only fifty-five per cent."

This is a valuable treatment which deserves attention.

* * *

KNUCKLING AND ITS SURGICAL TREATMENT.—In previous chronicles I called the attention of the readers of the REVIEW to an improvement in the treatment of this deformity, suggested first by Mr. Breton, late adjunct professor of clinical surgery

at Alfort and which was afterwards applied by Professor Lienaux, of Bruxelles; and from an article recently published in our Italian contemporary, *Il Nuovo Ercolani,* I see its introduction by Professor Dr. Felice Cinotti, of the Pisa veterinary institute.

The improvement advocated by the French professor consisted in the association of median neurectomy to the tenotomy, so as to overcome in a permanent manner the deformity resulting from knuckling and consequently returned the animal to a proper condition for work.

" Indeed," says Breton, " resection of the median nerve must be the complement of the section of the perforans tendon, from the time the coronet has no longer its normal direction. By the simple tenotomy, the return of the knuckling is frequent and may be said must fatally take place, on account of the condensation of the cicatricial tissue, which, besides, often and for a long time after, remains the seat of pain and consequently of difficulty in the locomotion of the animal. This painful condition is the most severe reproach that can be made against tenotomy. For this reason and so as to avoid it neurotomy imposes itself."

Confirming those views, Lienaux adds to the description of one successful case in which he had performed both mesoneurectomy and tenotomy: " These fortunate results are due to the fact that the tendinous region had lost its sensibility, its soreness; there was no more pain, the animal rested his foot squarely on the ground, the leg stood in normal condition and the tendinous stumps kept properly apart during the entire length of the cicatrizing process, the cicatrix had the proper dimensions, and was better appropriated to the necessary length of the repaired tendon, while on the contrary, with the median left intact, the tendinous section, the strains upon the movable extremities, the inflammation following, all gave rise to pain, and instead of putting his foot well and flat on the ground, the animal holds it half flexed, a position which predisposes much to the return of knuckling."

* * *

Accepting all the reasons presented by Breton and Lienaux, Professor Dr. Felice Cinotti had decided to test the value of the two connected operations, but instead of operating on knuckling of fore extremities, he did it for the same condition on hind legs, performing the neurectomy on the sciatic nerve of the affected extremity. Neurectomy was performed first after anesthesia with stovaine and then open tenotomy, as recommended by some in preference to the subcutaneous operation.

Three animals were operated by Cinotti: A bay horse of fourteen years, for extreme knuckling of the left hind fetlock; a little donkey, eighteen months old, with slight knuckling of the left hind and excessive one of the right hind leg, and a bay horse, eight years old, for knuckling to the third degree of the right hind leg. This case was complicated with chronic thickening of the tendinous region and osteo-arthritis of the coronet. Besides the operation and according to indications, the orthosome of Vachetta, apparatus of support, was at times employed.

The first case was successful as far as the results of the operation went, but through some severe complications of gangrene by the improper application of the orthosome the case could not be considered as fully demonstrative.

In the donkey one leg only was operated and with such good results that the little fellow was able to perform good work for some time in a perfect condition. The owner was satisfied and preferred to wait until the other leg had become so bad that the animal could not be worked any more.

The third case was a perfect success and the animal, three months after, was doing good work.

The cases so far recorded by those surgeons established in a positive manner the benefits that can be obtained by the association of the two operations, one in fact completing the other and if it is not indicated in every case of knuckling, there are certainly many where the improved surgical treatment will find its positive and justifiable application.

* * *

CALVES CONGENITAL TUBERCULOSIS.—This important and interesting subject has received, at the hands of Dr. R. Rossi, a great deal of attention and his observations have been recorded in *La Clinica Veterinaria,* in a series of articles, where, while studying the causes of mortality among bovine fœtuses, and new-born calves, he has brought out principally the question of congenital tuberculosis.

In 1908 he had seen eight cases of it. In two the fœtuses were expelled by abortion after six or seven months of gestation; five were born one or two weeks before term; one was fourteen days old. All were delicate, emaciated calves or carriers of defects of conformation. The lesions consisted exclusively of white, fine granulations in the liver and hepatic glands, all of which were very rich in bacilli.

The autopsy of the mothers was made only in three: One had diffused general tuberculosis of both splanchnic cavities with healthy udders and glands. In another there was diffused thoracic tuberculosis with miliary nodules on the pleura and caseo-calcareous adenopathy of the mediastinal glands and also of the bronchial and superior cervical. The third cow presented serious pulmonary lesions with tuberculization of the thoracic and abdominal glands which were hypertrophied and caseous. There was no lesion of the genital apparatus nor of the udders.

Besides these eight cases of congenital disease with specific lesions, the author has witnessed the autopsies of a great number of calves, born before term which presented some organic alterations or malformations without specific characters and from which the influence of tuberculous infection could not be eliminated. It is generally admitted to-day that the transmission of tuberculosis from mother to offspring is done by heredo-contagion. The possibility of congenital tuberculosis cannot, however, be discussed. In veterinary medicine, the observations published, so rare before, are now more and more frequent. The author presents statistics of numerous observations recording 150 cases of tuberculosis in calves, which were considered as of congenital origin by those who observed them.

And yet the statistics made from cases in the abattoirs show that tuberculosis of calves is very rare. This is due to the fact that tuberculous lesions were overlooked and again that the subjects, such as still-born individuals, those that have died a few days after the extra-uterine life, those that have weak constitution, teratologic deformities or manifestations and in which tuberculosis is most frequent, are not subjected to necroscopic examination. Before Rossi, others, as Baumgarten, Johne, Bang, have called attention to the fact that such tuberculosis was more frequent than it was thought, and Klepp has published a classical example. In the space of eight years, this author had observed but nine cases of tuberculosis in calves. Afterwards, while making investigations upon tuberculosis of young animals, he found in the space of five months, twenty-six cases out of 4,068 autopsies of new-born subjects. And later, in one month, he gathered ten cases out of 847 examined.

The importance of those researches of Rossi is considerable to the point of view of the prophylaxy of tuberculosis.

* * *

VETERINARY INAUGURATION IN BELGIUM.—On the 14th of August the official inauguration of the new veterinary school of Bruxelles, took place and was the occasion for a professional manifestation; as besides it, the National Association, that is, the Medical Veterinary Federation of Belgium, was to hold its annual anniversary meeting.

The inauguration of the school, which, by the way, has been already in running order since last October, was celebrated in one of the halls of the school, where, besides the Faculty, were seated the Secretary of Agriculture and other celebrities of the profession in Belgium. Foreign organizations were also largely represented. Among those present there were: Professor Chauveau, the Inspector General of the French schools, representing the French government; the three schools of Alfort, Lyon and Toulouse had their representative, Directors Barrier, Arloing and Professor Bimes. From Germany there were Dr. Lydin,

of Baden, as president of the permanent committee of the International Veterinary Congresses; Director Dr. Baumann, of Hanover; Dr. Schimmel, of Utrecht, and Dr. Hutyra, of Budapest. There were also the president of the veterinary federation of France, Mr. Lucet, and Mr. E. Even, late of the Institute of Santa Catalina, and many others. Speeches were delivered as is customary on such occasions, and many interesting remarks were presented by the several speakers, who all promised for the new school a life of professional prosperity and usefulness.

The work done at the Federation was essentially of actual importance as most of the papers read and discussed were on sanitary subjects.

Altogether, the entire festival was a great success which, however, had an ending which might have proved most tragical, viz.: the burning of a portion of the International Exhibition, which was held at that time in Bruxelles.

* * *

BIBLIOGRAPHICAL ITEMS.—Among the publications issued by the Bureau of Animal Industry there is probably none which has the importance and value, to its special point of view, as the *Index Catalogue of Medical and Veterinary Zoology,* collected by Professor Ch. Wardell Stiles, Ph.D., and Albert Hassall, M.R.C.V.S., both of the division of Zoology of the Bureau.

The amount of work that has been required, that which the many patient researches have demanded, the arrangements of the subjects, of the names of the authors, all must have been enormous and the value of the whole work can only be appreciated by the careful examination of the contents of the various parts as they have been issued.

According to a fixed method adopted by the Bureau, in most of the works that it publishes, the *Index* is issued as bulletin No. 39, and so far 29 parts of them have been distributed. In each part are found the names of the authors, in alphabetical order, the title of their writings and the dates. The 29th is at the letter "S," and is paged 2326. Although the bulletins are not

for general free distribution, private copies can be obtained by purchasing them from the government printing office at Washington at very modest figures. When the *Index* is completed it will be one of the most valuable works for all scientists and specially those who are interested in Zoology.

* * *

ABSTRACT OF THE LABORATORY OF VETERINARY PHYSIOLOGY at the New York State Veterinary College was sent to me also. It contains an article on the Diastases in the Saliva of the dog and cat, by Ch. E. Hayden; one on the blood examination of Dermatoses in dogs, by Howard Welch, and three articles from Professor P. A. Fish. One on canine tetanus, another on a fly-blown and distempered dog, and finally the report of a case of auto-enterectomy in a bitch. She had her ovaries removed. On the second day after the operation she tore the stitches and was found with two free ends of the intestine protruding. After careful cleaning and amputation of a gangrenous piece of the intestines, the two intestinal ends were drawn together with Lombert's cat-gut sutures. Returned to her kennel, the slut was taken with nausea and emesis occured. She vomited some blood clots and two pieces of the intestines, measuring fifteen and thirteen inches in length, making altogether, with the amputated gangrenous portion two and one-half feet of intestines removed. The patient did not survive the operation. This is certainly a very unique case—possibly the only one of its kind on record.

Among the pamphlets and journals that I have received are: The report of the Chief Veterinary Surgeon, J. D. Bortwich for the year 1909, from the Cape of Good Hope; the second part of volume IV. of *Zeitschrift für Wissenschaftliche und Praktische Veterinar Medicin,* published at the Veterinary Institute of Dorpat; the June and July numbers of the *Agricultural Journal of Good Hope;* from my friend Dr. Dalrymple, the proceedings of the 13th meeting of the Interstate Associations of Live Stock Sanitary Boards which was held in Chicago in September, 1909. A. L.

ORIGINAL ARTICLES.

IMMUNIZATION OF CATTLE AGAINST TUBERCULOSIS.*

By E. C. Schroeder and John R. Mohler, of the Bureau of Animal Industry.

Introduction.

The heavy annual losses which are caused by the ravages of tuberculosis among the domesticated animals have been appreciated by the inhabitants of infected countries for many years. Owing to this realization of the extent of the havoc wrought by this insidious disease, earnest thought and study have been devoted by scientific forces in all civilized countries to the question of its eradication.

It was known from the first that the fight against tuberculosis among cattle would be a prolonged one because of the hidden manner in which the disease makes its attack. But when the suggestion was made that cattle might be safely and completely immunized against the disease, the advantages which might arise from this method of procedure became at once apparent. It is obvious that if the young animals of an infected herd or locality can be thoroughly protected from tubercular infection the root of the matter has been reached, and it is then only a question of time before the remaining animals can all be disposed of and the premises can be cleaned and disinfected and kept free from tuberculosis.

An appreciation of the advantages accruing from immunization in our tuberculous herds led the bureau to inaugurate the tests here recorded. It was clearly seen that it was most desirable to devise some method whereby cattle could be immu-

* Presented in connection with report of committee on diseases A. V. M. A., San Francisco, September, 1910.

* A detailed and comprehensive report of the results obtained in these series of investigations will be published shortly as a bulletin of the Bureau of Animal Industry in co-operation with our assistants, H. J. Washburn and W. E. Cotton.

nized rapidly and without danger to themselves or their attendants. Therefore a number of the most promising methods of applying the immunizing agent have been tried, and while none of them have proved perfect, some have been more or less efficacious in enhancing the powers of resistance of the animals treated.

Review of Recent Literature.

At the Ninth International Congress of Veterinary Medicine, held at The Hague in September, 1909, the subject of immunization against tuberculosis received most interested attention, and the papers which dealt with this question were actively discussed. Among the opinions which were expressed during this discussion, we quote from Dr. A. Eber, of Leipsic; Dr. J. F. Heymans, of Ghent; Dr. Klimmer, of Dresden; Dr. Vallee, of Alfort, and Dr. Arloing, of Lyon.

Dr. Eber stated that the following conclusions had been reached by him after careful study of the entire question, and after observing the results of numerous preventive inoculations:

"The receptivity of young cattle to experimental infection by virulent tubercle bacilli may be materially diminished by previous inoculation with the Koch bacillus, even of varied origin and virulence.

"The immunity thus conferred is not absolute. The immunized cattle will succumb from the effects of a sufficiently heavy dose of tuberculous virus.

"The increase of resistance is not complete for some time (at least three months) after inoculation and has entirely disappeared at the end of the first or second year.

"The degree and duration of the experimental immunity are influenced by the individual resistance, and up to a certain point by the quality of the vaccine used.

"No experimental method permits one to foresee the manner in which the vaccinated animals will comport themselves toward natural or enzootic contagion. Practice alone must decide the value of immunization in the struggle against bovine

tuberculosis. Tuberculin does not positively disclose the existence of tuberculous centres upon animals previously treated by injections of living tubercle bacilli.

"Science has not yet granted us a method of inoculation which permits effective struggle against tuberclosis in regions seriously infected.

"The new researches simply shed a light upon preventive inoculation when combined with other prophylactic measures (killing animals affected with open tuberculosis, raising the calves on sterilized milk, plowing pastures) during the struggle against tuberculosis.

"In practice one prefers methods of immunization which permit annual reinoculation. Nevertheless more exact researches must be instituted for the purpose of determining if annual preventive inoculation is sufficient in every case to confer satisfactory immunity.

"It is of great importance for the future to study farther the influence of the mode of inoculation (intravenous, subcutaneous, digestive) upon the quality and the duration of the immunity acquired, keeping constantly in mind at the same time the various doors of entrance of natural infection (digestive or respiratory)."

Dr. Heymans limited his report to a discussion of the method which he discovered and which consists in inserting into the animal vaccinated, the unattenuated tubercle bacilli enclosed in the interior of a dyalizing membrane.

Healthy animals thus vaccinated offer greater resistance to infection, whether by inoculation or stabling, than the checks. Although the duration and the degree of the immunity are limited the results obtained during four years upon more than 10,000 subjects have been most encouraging.

In practicing annually tuberculination and vaccination of all the cattle in contaminated stables, without separating the tuberculous from the non-tuberculous, and without heating the milk, 85 per cent. of the tuberculous centres have been practically wiped out after three or four years without the appearance of

any serious trouble during the experiment. Upon stables more seriously contaminated Heymans recognizes the fact that simple vaccination and tuberculination are ineffective because the healthy cattle reinfect themselves in proportion to the intensity of the contagion. Upon such farms in addition to vaccination appropriate prophylaxis must be imposed.

The tuberculous cattle vaccinated and tested with tuberculin annually react less and less to the tuberculin and by the third application of the tuberculin test, 50 to 60 per cent. of them fail to show any thermic elevation whatever.

The results of more than 1,000 autopsies upon vaccinated cattle indicate that in general healthy cattle that have been vaccinated have remained immune to tuberculosis, and that the tuberculous animals, having ceased to react to tuberculin, present an arrested tuberculosis, even a regression, but the total absence of tuberculous lesions is exceptional.

In conclusion, Heymans states that his anti-tuberculous vaccination is a method practical and efficacious and taken together with prophylactic measures forms a valuable base in the struggle against tuberculosis, permitting one to struggle victoriously against this foe of our stables and this danger of infection to man.

Dr. Klimmer has examined the following methods of vaccination: First, the bovo-vaccination of von Behrings; second, the vaccination with tauruman of Koch-Schutz; third, the method of Heymans, and fourth, the method of Klimmer.

The method of Klimmer consists of vaccinating with attenuated human tubercle bacilli. The non-tuberculous animals are vaccinated twice during the first year and those that are tuberculous are vaccinated every three months. The following year all of the animals are vaccinated but once.

The activity of the preventive methods of von Behring and Koch-Schutz have proven practically inefficient. The reason is found in the short duration of the immunity which they procure and in the impossibility, while following sanitary regulations, of re-vaccinating either with the bovo-vaccine or the tauruman.

Klimmer claims that it is not possible at this date to estimate the curative value of the method devised by Heymans.

The method of Klimmer has not yet been sufficiently tested. Nevertheless, out of forty-three vaccinated animals which have been exposed, some of them during many years, to natural tuberculous contagion, there has not up to the present, a single one developed tuberculosis. Tuberculous young cattle have been vaccinated and from one to three years later have been killed, when autopsy has shown that the progress of the disease has been arrested, the tuberculous centres have become encapsulated and frequently calcified, and that there has been no formation of new tuberculous centres.

Dr. Vallee believes we must recognize that in spite of the enormous benefits realized on all sides, none of the proposed methods of vaccination has furnished definite results up to the present time. He states that:

1. Nevertheless the inoculation of cattle by any method with virulent human tubercle bacilli confers an appreciable resistance against various methods of experimental infection and also against natural contagion.

2. The resistance conferred is directly proportional to the quantity and virulence of the bacilli injected, but however great their value the immunity conferred by them does not persist longer than twelve to eighteen months.

3. The introduction of living bacilli as a vaccine contaminates the entire organism. This pecularity necessitates a special guard over the animals immunized, should they be sent to slaughter during the six months which follow the last vaccination.

4. Whatever the mode chosen for introducing the vaccine, the resistance conferred is insufficient to assure the complete resorption of the bacilli inoculated for prolonging the immunity.

5. The resistance to infection by the digestive tube of the animal vaccinated by that method is incomparably superior to that acquired by animals by the intravenous method, because it permits the organism to obtain complete resorption of the viru-

lent material inoculated. Considering the frequency of infection through the digestive canal in cattle the application of vaccinating material through the mouth appears preferable to every other method.

6. Vaccination by the digestive method cannot be made entirely free from danger of infection if one uses virulent baccilli of the bovine type. The use of bacilli of the human type of slight virulence is therefore preferable as these furnish results comparatively equal to those of the bovine type.

7. Vaccination by way of the mouth is not easily obtained except upon very young subjects.

8. Vaccination by way of the mouth does not place the animals entirely beyond danger of infection with tuberculosis. It permits them to resist for more than a year contact with cattle which present open lesions of tuberculosis and following this present no lesions beyond insignificant tubercular nodules in the various glands. On this account it merits systematic study and further practical application.

9. The resistance conferred by subcutaneous methods is inferior to that obtained by way of the circulation.

10. Vaccination by the use of killed bacilli has given results inferior to those obtained with living and virulent organisms.

11. No definite conclusion can yet be actually formulated in regard to the various methods of immunization under discussion, but their systematic application will permit a determination of their real practical value.

The method of immunization proposed by Arloing does not exactly resemble any of the other systems which are at present in use. Most of these latter methods depend on the employment of attenuated tubercle bacilli, but the vaccines employed by Arloing are not composed of bacilli modified individually and extemporaneously either by heat or antiseptics, or by a passage through the organisms of cold-blooded animals. On the contrary, his vaccine contains living bacilli of bovine origin profoundly modified in their tubercle-producing power by a long series of cultures in the depth of glycerinated bouillon. The

modifications which they have taken on are henceforth fixed and of such a kind that these bacilli form races indefinately transmissible. These races, comparable to the anti-anthrax vaccines of Pasteur, can no longer cause tuberculosis of the viscera and glands under the conditions where they are recommended to be employed. Being without danger to the monkey Arloing considers that they are also without danger to man. By their characters these vaccines are somewhat similar to the avirulent vaccines of Professor Klimmer, of Dresden.

They cannot cause any fatal infection in the ox, which is contrary to the bovo-vaccine of von Behring and the tauruman of Koch-Schutz, since these may be fatal to seven to eight out of every 1,000 subjects vaccinated.

Arloing concludes by stating that the phase of experimental research in tuberculosis vaccination is not closed, and it is to be hoped that by perseverance in laboratory studies the methods will be perfected and we will know better the conditions which follow and those which guarantee success. But such as they are to-day it would be negligent not to profit by the results acquired to try and restrain the ravages of bovine tuberculosis by associating vaccination with ordinary prophylactic measures as one does for other contagious maladies.

As a result of these various papers and the discussions which they elicited, the following resolutions of the Ninth International Congress held at The Hague in 1909 were adopted:

1. At the present time there is no vaccination which in itself is sufficient to combat in an efficient manner bovine tuberculosis in heavily infected herds.

2. In how far it is possible to bring about a more successful issue of the difficult struggle against bovine tuberculosis by a combination of vaccination with prophylactic and hygienic measures must be demonstrated by new practical experiments.

3. The Congress urgently requests the governments to grant the means for extensive experiments to examine the methods of vaccination against bovine tuberculosis under the different conditions of agricultural practice.

The Bureau Experiments.

Probably no methods for the immunization of cattle against tuberculosis have been more widely discussed, or have given better results than those known as Pearson's and von Behring's. The two are practically alike, and consist of the intravenous injection of living cultures of human tubercle bacilli, of a virulence too low to cause a progressive tuberculosis in cattle. The tubercle bacilli are grown in artificial cultures, and, in a very finely subdivided condition, suspended in fluid, in definitely known quantities, are injected into a vein of the animal to be protected. The methods of bovo-vaccination of Pearson and von Behring were both tested, with what results will follow later.

In addition to studying the foregoing methods, attempts were made to cause immunity by subcutaneous injections of tubercle bacilli of different degrees of virulence as well as by transfusion of blood from artificially immunized to susceptible animals.

Finally a test was made of what is known as Heymans' capsule method of protective treatment, for the efficiency of which the discoverer, after applying it to a large number of animals in his own country, makes very strong claims.

Test of Bovo-Vaccination According to the Method of von Behring.

On June 2, 1906, the first nine calves, and on June 12, the tenth calf in the following list were given each an intrajugular injection of 3 c. c. of a suspension of tubercle bacilli of the human type. The tubercle culture used to make the suspension was "Case 30," and each c. c. of the suspension was equal to 0.0013 grams of tubercle bacilli.

Bull	Calf No. 427,	about 2	to 2½	months	old.
Bull	Calf No. 429,	about 2	to 2½	months	old.
Bull	Calf No. 431,	about 2	to 2½	months	old.
Heifer	Calf No. 432,	about 2½	to 3	months	old.
Heifer	Calf No. 435,	about 2	to 2½	months	old.
Heifer	Calf No. 436,	about 2	to 2½	months	old.
Bull	Calf No. 438,	about 2	to 2½	months	old.

Bull	Calf No. 439, about	2½	to 3	months old.
Bull	Calf No. 441, about	2	to 2½	months old.
Bull	Calf No. 444, about	3	to 3½	months old.

The ages of the calves as above given refer to the date on which the injections were made.

With the exception of a subsequent, short lived elevation of temperature, and the development of a small tumor in the skin over the jugular at the point of injection in several of the calves, the injections were followed by no marked adverse conditions.

On September 7, 1906, each of the ten calves was given a second intrajugular injection of tubercle bacilli prepared from culture "Case 30." The suspension used for the second injection, of which the dose was 3 c. c., represented 0.02 gram of tubercle bacilli per c. c.

The second injection was followed by a more marked elevation of temperature than the first, which may, in part at least, be attributed to the mechanical irritant action of the injected tubercle bacilli in the fine pulmonary capillaries.

Of the ten calves one, No. 444, was killed and examined post morten without being exposed to tuberculosis, to determine what changes had been caused by the injections of tubercle bacilli it had received. The remaining nine were exposed to a tuberculous environment as follows:

Nos. 427 and 432—October 30, 1906.
Nos. 429 and 435—February 27, 1907.
Nos. 431 and 436—April 25, 1907.
Nos. 438 and 441—July 25, 1907.
No. 439—November 8, 1907.

Control animals were added at the time of each exposure, but as a matter of convenience the controls will be treated separately, as such treatment will facilitate a better comparison between the several protective methods against tuberculosis tested.

The tuberculous environment to which the animals used in these experiments were exposed was a large cow stable with an

adjacent cow yard. In this stable and yard the infection was provided by a number of cattle affected with advanced tuberculosis, of which it was definitely known that they were freely expelling tubercle bacilli. In the yard, into which the cattle were turned daily for from two to eight hours, depending upon the state of the weather, all the cattle, treated, checks and diseased were allowed to mingle as they chose; in the stable the cattle were made to occupy stalls in such rotation that the exposure of the different individuals was equalized as much as possible.

The dates on which the ten calves were killed and a short memorandum of the lesions found on autopsy follows:

No. 444, treated, but not exposed, reacted to tuberculin on October 17, 1907 (13 months after last bovo-vaccination injection. Killed November 7, 1907. No lesions found, but firm pulmonary adhesions and one small glistening nodule, 3 m. m. diameter, in the lung. No tubercle bacilli on miscroscopic examination or animal inoculation were found in the minute glistening nodule, which may have been a small, healed tubercle, caused by bacilli from one of the intravenous injections.

No. 427, Killed April 23, 1908, after having been exposed to a tuberculous environment for about eighteen months. No lesions of tuberculosis.

No. 432, killed March 9, 1909, after having been exposed to a tuberculous environment over two years. No lesions of tuberculosis.

No. 429, killed July 16, 1909, after having been exposed to a tuberculous environment over two years. No lesions of tuberculosis.

No. 435, killed April 10, 1909, after having been exposed to a tuberculous environment over two years. One post pharyngeal gland twice the normal size and almost entirely tuberculous. No other lesion.

No. 431, killed March 25, 1909, after having been in a tuberculous environment almost two years. Mediastinal glands contain a number of minute necrotic foci, which failed to show the presence of tubercle bacilli on miscroscopic examination and

guinea pig inoculation. Lungs contain a number of minute areas which have the appearance of healing tubercles; no bacilli found in these areas.

No. 436, killed March 29, 1909, after having been in a tuberculous environment almost two years. No lesions of tuberculosis.

No. 438, killed April 10, 1909, after having been in a tuberculous environment over two years. No lesions of tuberculosis.

No. 441, killed April 9, 1909, after having been in a tuberculous environment over two years. Autopsy showed minute lesions in the azyagos lobe of lung and a small focus, 3 m. m. diameter in the right prescapular gland. No tubercle bacilli found in the lung lesions. The prescapular lesion showed tubercle bacilli on microscopic examination and guinea pig inoculation.

No.439, killed March 29, 1909, after having been exposed about sixteen months to a tuberculous environment. Tubercles in the posterior mediastinal glands, which on guinea pig inoculation caused generalized tuberculosis.

Test of Pearson's Method.

On June 2, 1906, the first nine calves, and on June 12 the tenth calf in the following list were given each an intrajugular injection of 3 c. c. of a suspension of tubercle bacilli of the human type. The tubercle culture used to make the suspension was "Case 32," and each c. c. of the suspension was equal to 0.0013 gram of tubercle bacilli.

Heifer Calf No. 412, about 4 months old.
Heifer Calf No. 413, about 3 months old.
Bull Calf No. 425, about 2½ to 3 months old.
Bull Calf No. 426, about 2½ to 3 months old.
Bull Calf No. 428, about 2½ to 3 months old.
Heifer Calf No. 430, about 2½ to 3 months old.
Bull Calf No. 433, about 2½ to 3 months old.
Bull Calf No. 440, about 2½ to 3 months old.
Heifer Calf No. 442, about 2½ to 3 months old.
Heifer Calf No. 445, about 3 months old.

The ages of the calves as given above refer to the date on which the injections were made.

On July 18, 1906, the ten calves were given a second intrajugular injection of a suspension of tubercle bacilli in all respects relative to dose and strength, similar to the first injection.

On September 11, 1906, the calves received a third intrajugular injection of a suspension of tubercule bacilli. The third dose like the other two was 3 c. c., but the suspension was stronger, 1 c. c. being equal to 0.02 gram of tubercle bacilli.

With the exception of some elevation in temperature, most marked after the third injection, the calves showed no pronounced symptoms as the result of the injections.

Of the ten calves one, No. 445, was killed and examined post mortem without being exposed to tuberculosis, to determine what lesions, if any, had been caused by the three injections of tubercle bacilli. The remaining nine calves were exposd to a tuberculous environment as follows:

Nos. 412 and 425—October 30, 1906.
Nos. 413 and 426—February 21, 1907.
Nos. 428 and 430—April 25, 1907.
Nos. 433 and 442—July 25, 1907.
No. 440—November 8, 1907.

Control animals were added at the time of each exposure. The character of the tuberculous environment has already been described.

The dates on which the ten calves were killed and a short memorandum of the lesions found on autopsy follow:

No. 445, treated, but not exposed, reacted to tuberculin on October 17, 1907 (about thirteen months after last bovo-vaccination injection). Killed November 7, 1907. No lesions of disease.

No. 212, killed April 23, 1908, after having been exposed to a tuberculous environment about eighteen months. No lesions of disease.

No. 425, died December 18, 1906 after having been exposed to a tuberculous environment about six weeks. Cause of death, inflammation of the intestines. No lesions of tuberculosis.

No. 413, killed August 9, 1909, after having been exposed to a tuberculous environment over two years. No lesions of disease.

No. 426, killed April 1, 1909, after having been in a tuberculous environment over two years. Lungs were found to contain a few very minute tubercles.

No. 428, killed March 29, 1909, after having been in a tuberculous environment nearly two years. No lesions of tuberculosis.

No. 430, killed March 22, 1909, after having been in a tuberculous environment nearly two years. The pleura and mediastinal glands showed minute lesions closely resembling tuberculosis, but no tubercle bacilli could be found in these lesions by microscopic examination or guinea pig inoculation.

No. 433, killed July 16, 1909, after having been exposed to a tuberculous environment about two years. No lesions of tuberculosis.

No. 442, killed July 16, 1909, after having been exposed in a tuberculous environment about eighteen months. No lesions of tuberculosis.

No. 440, killed April 10, 1909, after having been exposed to a tuberculous environment nearly eighteen months. No lesions of tuberculosis.

Vaccination by Sub-Cutaneous Injections. Injections Into the End of the Tail.

As the earlier investigations of the Bureau of Animal Industry on the subject of protective inoculations against tuberculosis (see Bulletin No. 52, Part III) had given results indicating that the degree of immunity conferred by the injection of living tubercle bacilli into the bodies of cattle depended rather upon the virulence of the injected bacilli than upon the method of injection or the number of injections, a series of tests were made relative to the effects from injecting cattle with quite virulent tubercle bacilli into a portion of the body, the end of the tail, from which the infection, with its strong tendency to become localized, would have to move some distance before it could

reach its favorite locations in the body. The end of the tail also offered the advantage that the character and progess of the inoculation disease could be watched and that treatment, surgical if necessary, could be applied.

On June 20, 1906, the following four calves received each a sub-cutaneous injection, immediately above the brush at the end of the tail, of 3 c. c. of a suspension of bovine tubercle bacilli. The tubercle culture used was "Bovine III." and each 3 c. c. of the suspension was equal to 0.01 gram of tubercle bacilli.

Heifer Calf No. 447, about 3 months old.
Heifer Calf No. 448, about 3 months old.
Bull Calf No. 450, about 3 months old.
Bull Calf No. 451, about 2½ months old.

The tuberculous disease caused in the tails of the animals varied considerably. In one case, No. 447, it was necessary to amputate the tail. The four animals were exposed to a tuberculous environment beginning sometime after the protective injections had been made; later on, when they were killed and examined post mortem, all, with the exception of No. 450, were found to have tuberculous lesions directly traceable to the tubercle bacilli injected into the ends of their tails, proving definitely that the strain of tubercle bacillus used was too virulent for the injection of calves in any manner.

Calf No. 450, after remaining in a tuberculous environment for several years, was found on autopsy to be in excellent condition and entirely free from lesions of tuberculosis.

On June 20, 1906, the following five calves received each a subcutaneous injection, immediately above the brush at the end of the tail, of 3 c. c. of a suspension of virulent, human tubercle bacilli. The tubercle culture used was "Boy V.," and each c. c. of the suspension represented 0.01 gram of tubercle bacilli.

Heifer Calf No. 449, about 3½ months old.
Bull Calf No. 452, about 2½ months old.
Bull Calf No. 453, about 2½ months old.
Bull Calf No. 454, about 3 months old.
Heifer Calf No. 455, about 3 months old.

With the exception of a slight swelling at the seat of injection, which gradually subsided, the treatment received by the calves caused no visible lesions.

Some time after the protective injections were made the calves were exposed to a tuberculous environment, and later on killed and examined post mortem.

Calves Nos. 449 and 453 showed no lesions of tuberculosis either as a result of the protective injections or the exposure.

Calves Nos. 452 and 454 showed a small tuberculous abscess at the seat of inoculation in the tail and small tuberculous foci in the coccygeal lymph glands (the lymph glands located near the root of the tail), and no lesions as a result of the exposure to tuberculosis after the protective injections had been made.

Calf No. 455 was found on autopsy to have tuberculous lesions in the coccygeal and pharyngeal lymph glands, or, in other words, to have contracted tuberculosis both from the protective injection and subsequent exposure.

All the tuberculous lesions found were small, but cattle Nos. 452, 454 and 455 show conclusively that the strain of tubercle bacillus injected was too virulent to be used for immunizing purposes. Cattle Nos. 449, 452, 453 and 454 indicate that even a subcutaneous injection of tubercle bacilli can protect against subsequent exposure to a tuberculous environment, *and No. 455 shows that a tuberculous process induced by inoculation does not necessarily, in all instances, protect against fresh infection from without, and this is one of the most important facts with which we have to deal in the question of bovo-vaccination.*

On November 14, 1906, the following cattle received each a subcutaneous injection, immediately above the brush at the end of the tail, of 3 c. c. of a suspension of bovine tubercle bacilli. The tubercle culture used was "Bovine III.," and each c. c. of suspension was equal to 0.01 gram of tubercle bacilli.

Heifer No. 406, about 18 months old.
Heifer No. 386, about 16 months old.
Cow No. 336, about 3 years old.
Cow No. 215, about 6 years old.

One of the above animals died about four months after injection, cow, No. 336, without additional exposure to tuberculosis. The cause of death was inflammation of the intestines, but she showed a well-marked tuberculous lesion in her tail at the seat of injection and tuberculous lesions in four mediastinal glands. All other parts of her body were free from tuberculosis.

Heifers Nos. 406 and 386, and cow No. 215 were killed after having been exposed to a tuberculous environment for quite a long time, and showed tuberculous lesions which may have been caused in part by the exposure and which were certainly caused in part by the injection of tubercle bacilli.

Injections Under the Skin of Neck.

On June 21, 1906, the following five calves were each injected with 3 c. c. of a suspension of virulent human tubercle bacilli. The dose in each case was divided into two parts, and one part introduced under the skin on the right side of the neck, and the other part under the skin on the left side of the neck. Each 3 c. c. of the suspension injected represented 0.01 gram of tubercle bacilli.

Bull	Calf No. 456,	about 2½	months old.
Bull	Calf No. 457,	about 3	months old.
Bull	Calf No. 458,	about 2½	months old.
Heifer	Calf No. 459,	about 2½	months old.
Heifer	Calf No. 462,	about 2½	months old.

Calves Nos. 458 and 462 died in about two months as a result of tuberculosis caused by the injections of tubercle bacilli. The remaining three animals were exposed to a tuberculous environment for some time and subsequently killed and examined post mortem. All showed extensive lesions of tuberculosis, no doubt almost entirely due to the injections of tubercle bacilli, showing that either this method of treatment was too severe or that the culture of tubercle bacilli used was too virulent.

In addition to the foregoing subcutaneous injections, six calves were given each two successive injections of virulent

tubercle bacilli, with an interval between the two injections. These calves all contracted tuberculosis from the treatment received, and simply emphasize that subcutaneous injections, no matter what part of the body is used as the seat of injection, are dangerous when the bacilli injected have a true virulence for cattle. In a later, fuller report on this work it is hoped that the lesions caused by the various injections may be given and discussed in detail.

Among the subcutaneous injections, only those made into the ends of the tails of calves 449, 452, 453, 454 and 455, with virulent human cultures, hold out any encouragement that a subcutaneous method of protective inoculations against tuberculosis can be developed. The results with these animals, however, are quite encouraging, and merit that successive injections, into the tails of cattle, beginning with quite avirulent cultures, should be tested.

Checks or Control Animals.

The following eleven untreated cattle, which were similar in age, size and condition to those given intravenous protective treatment according to the methods of Pearson and von Behring, were exposed for the same length of time to the same tuberculous environment to which the treated or protected animals were exposed. For the sake of brevity only a sufficient account of these animals will be given now to show that the environment contained the necessary amount of virulent, infectious material to cause tuberculosis of most cattle exposed in it.

Heifer No. 471 contracted tuberculosis of the mediastinal and mesenteric glands.

Heifer No. 472 contracted tuberculosis of one post-phrayngeal gland.

Heifer No. 475 contracted tuberculosis of the mediastinal glands.

Heifer No. 526 contracted tuberculosis of the mediastinal glands.

Steer No. 530 contracted tuberculosis of the lung and mediastinal glands.

Steer No. 531 remained healthy.

Heifer No. 539 contracted tuberculosis of one post pharyngeal gland.

Heifer No. 540 contracted generalized tuberculosis.

Heifer No. 570 contracted tuberculosis of the mediastinal glands.

Bull No. 573 contracted tuberculosis of the lung and mediastinal glands.

Cow No. 579, remained healthy.

Of course it is to be understood that these cattle were carefully tested with tuberculin and found to be free from tuberculosis before they were exposed as control animals in the experiment. It is desired to avoid all detail not to some extent essential for a general statement in the present report. In the ultimate, full report which the Bureau of Animal Industry will publish, the complete history of each and every animal will be given.

In addition to the check or control cattle specially related to the tests of the Pearson and von Behring methods of bovo-vaccination, three other check animals were also introduced into the same tuberculous environment which was in all instances used as the means to test the amount of immunity acquired by the treated animals in these series of experiments.

The three additional animals are Nos. 477, 484 and 549, and all three contracted tuberculosis as the result of the exposure, giving a total of fourteen checks or controls of which twelve became infected with tuberculosis, thus showing that the character of the exposure to which the treated cattle were subjected was quite severe. The time at which the various control animals were introduced into the tuberculous environment, and the length of time they were permitted to remain in it, was carefully planned in connection with the exposure of the treated animals so that any failure among the latter to become infected could be properly valued through a comparison of the treated with the control animals.

One statement which has an important bearing on the intravenous methods of producing resistance against tuberculosis must

be added here. All our cattle treated with intravenous injections of tubercle bacilli showed, on careful post mortem examination, some pulmonary lesions, like thickening of the pulmonary connective tissue, adhesions between the lobes of the lungs and of the lungs to the chest wall and diaphragm, to be sure only very slight in most instances, but which could be accounted for in no other way than as remnants of the disturbance caused by the injected bacilli. This alone constitutes a condition which should receive further attention before a system of bovo-vaccination requiring the intravenous injection of living cultures of tubercle bacilli is practiced on a wholesale scale, and in conjunction with what we know about the retention of tubercle bacilli in the tissues after injection and the uncertainty about the manner and state in which they leave the body, should teach us to proceed cautiously in the adoption of protective methods, notwithstanding the fact that the results obtained prove conclusively that actual, strong resistance to tuberculosis can be established by using them.

Comparison of the Foregoing Methods.

From the brief records that have been given we see that three of the nine cattle treated according to the method of von Behring and afterwards exposed contracted tuberculosis, that one of the nine cattle treated by the method of Pearson and afterward exposed contracted tuberculosis, and that of fourteen checks or untreated control animals twelve became infected on exposure.

Of the eight animals that received injections of bovine tubercle culture subcutaneously into the ends of their tails, four old and four young animals, all but one young animal contracted disease as the result of the injections. The one that escaped disease from the injection also resisted tuberculosis on exposure.

Of the five cattle that received human culture injections into the ends of their tails, two became immune without inoculation disease, two were immune but had slight inoculation disease, and one had both inoculation and exposure disease.

The injection of tubercle cultures under the skin of the neck of animals caused them all to contract tuberculosis.

The several methods may be compared as follows:

von Behring Cattle....	66 2/3 %	Successfully protected for a period approximating two years.
Pearson Cattle.....	88 8/10%	
Bovine Cultures, Tail..	12½%	
Human Cultures, Tail.	40%	
Injections Under Skin.	0%	

The human cultures, tail, it should be borne in mind, actually protected eighty per cent. of the cattle treated against the infection in the environment to which they were exposed.

The above percentages can best be valued by comparing them with the check or control animals, among fourteen of which, only two, or fourteen and two-sevenths per cent. escaped.

If the only question to be considered in connection with bovo-vaccination was the protection of cattle against tuberculosis the foregoing results would give us excellent reasons to be very cheerful. Lately, however, studies made by various investigators on the elimination of tubercle bacilli after injection from the bodies of animals, teach us to be very careful about adopting methods of immunization for purely economic purposes that may be dangerous for those who afterwards use the products of the treated animals.

The work of the Bureau in the past has also demonstrated that tubercle bacilli injected into the circulation or under the skin of cattle may remain incorporated in their tissues for long periods of time with only a gradual or very slow loss of virulence. These are important factors that must not discourage further work to build on the knowledge we have gained, but which must be kept in mind and be permitted to have their due influence on our subsequent investigations.

Very careful autopsies of cattle treated by intravenous inoculations of tubercle bacilli according to the methods of von Behring and Pearson, show that the more or less attenuated tubercle bacilli that engender immunity against tuberculosis rarely leave the treated subjects wholly free from lesions that can be accounted for in any other way than as due to the

pathogenic activity within the animal's body of the injected bacilli.

TEST OF HEYMANN'S METHOD OF BOVO-VACCINATION.

A protective treatment for cattle against tuberculosis, named the Heymann's method after its inventor, has received quite a little attention during the last few years. The technique of this method was demonstrated in America by Professor Heymann, of Belgium, himself during the meeting of the International Congress on Tuberculosis at Washington, D. C., in 1908, and the efficiency of the method has been carefully tested by the Federal Bureau of Animal Industry with cattle and hogs.

Heymann's method, briefly, is the introduction of virulent bovine tubercle bacilli, enveloped in a closed sack of vegetable fibre which in turn is inclosed in a gelatin capsule, under the skin of the animal to be protected. The supposition is that the vegetable sack will confine the tubercle bacilli at the seat of inoculation and that the treated animal will be immunized by protective fluids that form within the closed vegetable sack and pass outward from it, into the animal's system generally, by an osmotic process. The closed sack of vegetable material in combination with the gelatin capsule are commonly known as Heymann's capsule.

In the fall of 1908 twelve cattle and ten hogs were inoculated with Heymann's capsules. The animals were divided into three groups, and one group of hogs and cattle was exposed immidiately after treatment to a tuberculous environment, a second about two months later and a third about two months after the second. With each group of hogs a similar number of untreated hogs were exposed as checks.

As the cattle and hogs were exposed in the same tuberculous environment in which the degree of immunity acquired by all the other bovo-vaccinated animals discussed in this paper was tested, no checks were really necessary for the Heymann's treated cattle. The checks on the other experiments were serviceable for this one also, but nevertheless for additional cattle as special

checks on the value of Heymann's method were added to the already large number used to prove the character of the tuberculous environment to which exposure was made.

Among the Heymann's treated hogs one contracted generalized tuberculosis from the treatment and one died prematurely as the result of an injury. When the remaining eight hogs with their ten checks were killed, after an exposure to natural infection varying from eight months to a year, all the principals and checks were found to be affected with tuberculosis, not one of either lot has escaped the disease, and the lesions in the treated animals were in no respect different from those found in the checks. Hence, it is very clear that Heymann's method is absolutely worthless for hogs.

Among the twelve cattle treated one died prematurely and the remaining eleven, when they were killed and examined post mortem, all showed lesions of tuberculosis, and the lesions were very similar to the tuberculous lesions found in the four cattle that served a special checks on the Heymann's capsule cattle. One of the treated animals showed tuberculosis directly traceable to the capsule with which it was inoculated for protection. Hence, as with the hogs, the only conclusion that can be drawn with the cattle is, that Heymann's capsule method of bovo-vaccination is inefficient.

In order to test the claims made by Professor Heymann that the vegetable sack, in which he incloses the tubercle bacilli used in his method of bovo-vaccination, would not permit the passage of bacteria, a number of sheep were inoculated with anthrax bacilli inclosed in Heymann's capsules. The sheep rapidly contracted and succumbed to anthrax, and the anthrax bacilli (which are larger of course than tubercle bacilli) were proven to have escaped through the walls of the capsules and to have gotten into the blood circulation. Blood examined from the tips of the ears of the sheep showed numerous anthrax bacilli. We may conclude from this the the fact that tubercle bacilli introduced under the skin in Heymann's capsules are frequently restrained at the point of inoculation, depends upon other condi-

tions than the inability of the germs to pass through the walls of the vegetable sack in which they are enveloped.

Blood Transfusions.

It may be of interest to add in a short note that blood transfusions from highly immunized cattle, into tuberculous cattle for curative purposes and into healthy cattle in order to make them resistent to tuberculosis, have been tested on a small scale. The idea that such transfusions may give good results originated with the eminent surgeon, Dr. Geo. W. Crille, of Cleveland, Ohio, who personally made the various transfusions required in the experiment.

The blood for the transfusions was supplied by cattle that had been immunized by the methods of Pearson and von Behring, and which had resisted infection after a long-continued exposure to the tuberculous environment previously described, in which about eighty-six per cent. of all exposed, untreated or check cattle, contracted tuberculosis.

As far as the very small number of cattle used justifies drawing conclusions, it is regrettable to report that the blood transfusion experiments gave wholly negative results, and hold out no encouragement as being a means by which tuberculosis can be treated or the resistance to infection strengthened. The treated animals may have been too far advanced in the disease to derive benefit from any form of treatment, but the animals which received blood to immunize them apparently were as susceptible to infection as those that had received no treatment.

General Conclusion.

The only conclusion to which we are entitled from this work and the careful studies of the writings of others that we have made of the subject of protective inoculation against tuberculosis may be stated as follows: Though results have been obtained which are very encouraging to the investigator and which prompt him to strive onward with renewed vigor and hope, *no system of bovo-vaccination has reached a stage at the present time that justifies its use in common practice.*

EXPERIMENTS WITH THE INTRADERMAL TEST FOR TUBERCULOSIS IN CATTLE.*

By Archibald R. Ward, University of California, Berkeley, Cal., and George S. Baker, Inspector in Charge, Bureau of Animal Industry, San Francisco, Cal.

The application of the classical subcutaneous tuberculin test to range cattle under range conditions is impracticable. The excitement resulting from the necessary frequent handling makes temperature records valueless. This is unfortunate in two respects. First, it prevents the possibility of reducing the number of tubercular animals on the range by sending diseased ones to the abattoir for slaughter under competent inspection. Second, it prevents the exportation of certain desirable breeding animals to countries requiring the tuberculin test as a prerequisite to shipment.

The intradermal test described by Moussu and Mantoux† seemed to us to be peculiarly adapted to the testing of range cattle. These authors point out that the test consists of the injection intradermally of one to two tenths c.c. of a ten per cent. dilution of crude tuberculin. This produces in positive cases, an edematous swelling at the point of injection, which reaches its maximum at forty-eight hours. In non-tubercular animals there is no such swelling.

For the point of injection they select one of the two folds of skin (sub-caudal folds) which are found underneath the tail.

* Presented to A. V. M. A., San Francisco, Sept., 1910.

† Moussu et Mantoux. Sur l'intra-dermo-reaction a la tuberculine chez les animaux Transactions of the Sixth International Congress on Tuberculosis, vol. four, part two, page 821.

when it is lifted. This location is admirably adapted to the test for the skin is bare, soft and pliable, so that the slightest edematous infiltration is noticeable on palpation. Those writers state that if the result is positive it suffices by elevating the tail to observe that the sub-caudal fold is increased to double or triple its normal thickness. The corresponding fold not injected, remains normal and affords a convenient standard for comparison. Ordinarily there is produced in the region of the point of injection an edematous infiltration which takes an oval form, and attains the dimensions of a hazelnut, an almond or a walnut. In other cases the infiltration extends along the fold transforming it into a thickened, elongated cushion.

Those writers claim that this local reaction does not usually cause any general disturbance, little or no fever, no loss of appetite, little or no loss of milk. It develops without any change in the ordinary conditions in the life of the animal and without its being necessary to take any special precautions. They maintain that it has none of the disadvantages of the ophthalmic and cuti reactions and presents all of the advantages of the subcutaneous injection of tuberculin. It reduces the obligations of the operator to the minimum by dispensing with every preparatory or supplementary measure (taking of temperature, denudation of skin, etc.).

INTRADERMAL TEST ON ONE HUNDRED COWS WITH AUTOPSY.—Through the kindness of Miller and Lux, Inc., one hundred head of range cows, shipped to their abattoir for slaughter, were placed at our disposal for the purpose of studying this test. These cows were subjected to the test and afterward slaughtered to check the accuracy of the diagnosis.

The requirement that the tuberculin be injected between the layers of the skin necessitated the use of a very fine short hypodermic needle. We used a one c.c. hypodermic syringe, graduated to minims, of a type used by dentists. We found the kind of tuberculin specified by Moussu and Mantoux in the stock of the Cutter Laboratory, Berkeley. It bore this label: "Tuberculin. O. T. (Original) Serial Dilution No. 5. 1 c.c. contains

100 mg." The dose uniformly administered by us was a trifle over 3 minims, the equivalent of 2-10 c.c.

In making the injection the cows were run, one at a time into a chute, which was just long enough for one animal. The rear end of the chute was closed by one bar placed immediately above the hocks. Animals, especially wild, were held against this bar by a lariat around the horns and streteched taut by a vaquero and horse. The operator stood squarely behind the animal in making the injection. The right subcaudal fold was pulled out to view with the left hand and held while the injection was made with the right hand. No precautions were taken to prevent infection at the site of injection and no evidence was found to indicate danger in this technique. In making the injections we felt the need of a syringe having a gauge on the piston, so that the work could be done quickly without the necessity of watching the graduations while injecting.

In one instance the injection was made while the animal was thrown and held by two vaqueros as is usually done in branding on the range. This circumstance illustrates the fact that a chute is not absolutely necessary.

Forty-eight hours after injection, the cows were again run through the chute and roped to facilitate careful examination. The operator standing immediately behind the animal, lifted the tail to a horizontal position with one hand and with the other compared the thickness of the two subcaudal folds. At this time the animals were marked with ear tags to ensure identification on the killing floor.

On completion of the examination, the cows were driven to the abattoir and slaughtered immediately. The regular routine of federal inspection, involving an examination of all the viscera, all the visceral lymphatic glands, and all the superficial body glands, was followed, the auxiliary and popliteal glands being the only ones not reached.

The following table contains the records of all animals in the series which gave certain or doubtful reactions and all those which showed tubercular lesions:

TABLE I.

Results of Intradermal Test and Autopsies.

	Results test.	Results autopsy.	Cervical.	Bronchial.	Prescapular.	Mediastinal.	Portal.	Mesenteric.	Iliac.	Ext. Inguinal.	Int. Inguinal.	Precrural.	Sublumbar.	Supra mammary.	Lungs.	Liver.	Pleura.	Peritoneum.
1.....	+	+		+		+									+			
2.....	+	+				+												
11.....	+	+		+		+									+			
12.....	+	+	+	+		+		+							+			
14.....	+	+	+															
17.....	—	+		+		+												
23.....	—	+				+												
26.....	+	+		+		+		+										
28.....	—	+				+	+											
29.....	+	+		+		+								+				
31.....	+	+	+															
34.....	+	+	+					+										
37.....	?	+		+										+				
38.....	—	+				+												
40.....	+	+						+						+				
41.....	+	+		+											+			
42.....	+	+		+		+		+										
44.....	—	+	+	+														
46.....	—	+		+														
47.....	—	+	+	+				+							+			
48.....	+	+		+		+												
48.....	+	+		+		+												
51.....	+	+	+															
53.....	+	—																
54.....	+	+		+		+	+			+		+			+	+		
55.....	+	+				+									+	+		
57.....	+	+	+															
59.....	+	+															+	
61.....	+	—																
62.....	+	+		+		+	+	+										
75.....	+	+		+		+												
76.....	+	+	+			+		+							+	+	+	+
77.....	?	—																
87.....	+	+		+		+												
88.....	+	+						+										
90.....	+	+	*															
91.....	?	+				+	+								+	+		+
92.....	?	+	+															
96.....	+	+				+												
99.....	+	+				+		+										
100.....	+	+				+		+										

* No. 90 Autopsy notes lost

As a result of these autopsies we confirmed twenty-eight out of thirty cases which we had considered to be positive reactions. Of four reactions which we considered questionable, three proved positive on post-mortem. In two that we considered positive no lesions were found. Fifty-nine, which we considered non-reactors, proved negative on autopsy. Seven that we considered as negative showed lesions. We believe that with out present knowledge and experience the number of those diseased and classed as negative would be very materially reduced.

In judging what constitutes a reaction one must differentiate between the slight thickening which nearly always is noticeable at the forty-eighth hour, and the edematous infiltration characteristic of a reaction. The former is described by Mossu and Mantoux as the size of a grain of wheat. In our experience, such nodules, if spherical, and less than a quarter of an inch in diameter, have not been significant. We have found these small nodules to be always much firmer than the diagnostic edematous enlargement.

The significant edematous swelling varies slightly in general conformation. In some cases it assumes a spherical form and any such swelling one-half inch in diameter or over should be regarded as a positive reaction. We have observed such swellings approximately two inches in diameter. In other cases a reaction is indicated by a more or less oval or circular flattened edematous mass about the size of a quarter dollar and twice the thickness of that coin. These flattened infiltrations may reach the size of a dollar and double its thickness.

Our experience has indicated that there is difficulty in interpreting the significance of a swelling varying from a quarter to a half inch in diameter. We encountered two animals whose swellings were of this size. One of them proved on autopsy to be a generalized case with widespread miliary lesions. The other showed no lesions on autopsy.

We did not observe any relationship between the character of the reaction and the lesions. One of our questionable reactions proved to be a well advanced generalized case. The only

case of miliary tuberculosis found on autopsy gave a reaction, a swelling somewhat less than half an inch in diameter. Numerous cases giving a more pronounced reaction than this showed very small insignificant lesions on post mortem.

The class of animals experimented upon and the conditions under which the work was done precluded the possibility of observing some of the points emphasized by Moussu and Mantoux. We did not study the immediate effect of the injection, its effect on temperature nor milk supply, nor the persistence of the swelling beyond the forty-eighth hour.

The hundred animals used for the experiment were taken at random from shipments of range stock, cut out for slaughter, and were all in good condition. They were not specially selected.

The fact that thirty-eight per cent. of range cows showed lesions of tuberculosis should not escape attention. It indicates that tuberculosis among range cattle is a really serious problem. In the regular work of federal inspection among all classes of range stock in California, steers, bulls and cows, there is found a large and constantly increasing percentage of tubercular animals.

We believe this experiment shows that the intradermal test furnishes the only means at present available for the solution of this problem. The difficulties of reducing the percentage of tuberculosis among range animals by the use of this test should be much less than those usually encountered in similar work among dairy stock. Since range stock are primarily intended for slaughter, owners should not object to testing their herds and consigning the reactors to the abattoir. By this means the foci of infection on the range would be reduced. Also, the percentage of condemnations on the killing floor of individuals so slaughtered, would be materially lessened after the first test.

Comparison of the Subcutaneous and Intradermal Tests Without Slaughter.—Opportunity was afforded us to apply the intradermal test to a dairy herd of twenty-seven ani-

TABLE II.

Comparison of Subcutaneous and Intradermal Tests.

No.	Subcutaneous. January 17, 1910. Initial temperature.*	Hour After Injection. 8th.	10th.	12th	14th.	16th.	18th.	20th.	Intradermal. April 5, 1910. Result.	Result.
1.....	102.7	103.1	101.8	101.8	101.6	101.2	101.6	102.2	.....	—	—
2.....	101.6	101.9	101.8	101.4	101.6	101.2	101.5	101.5	.....	—	—
3.....	103.7	101.0	101.4	102.7	106.4	104.7	104.5	104.8	.....	+	—
4.....	101.5	102.0	102.6	102.8	103.0	103.8	105.0	104.8	.....	+	+
5.....	101.9	101.8	101.0	101.6	101.0	102.2	101.3	101.4	.....	—	—
6.....	101.5	101.5	101.7	101.6	100.8	101.8	101.3	101.3	.....	—	—
7.....	102.3	102.0	101.6	101.5	101.2	101.0	104.0	104.4	.....	+	+
8.....	102.6	102.5	101.6	101.5	101.2	101.9	103.0	104.2	104.2	+	+
9.....	101.8	101.9	101.6	101.4	101.3	101.0	101.2	101.3	.....	—	+
10.....	102.1	101.5	102.4	103.4	104.9	105.0	106.0	104.3	.....	+	+
11.....	101.8	101.8	101.0	101.5	101.1	100.9	100.7	101.1	.....	—	—
12.....	102.7	103.0	102.6	101.6	102.4	102.6	105.6	105.9	.....	+	+
13.....	102.4	102.0	101.6	101.4	102.0	104.4	103.8	103.3	.....	+	+
14.....	101.5	101.5	102.7	101.6	101.4	101.2	101.8	101.2	.....	—	—
15.....	102.8	101.9	101.5	101.5	100.6	101.8	102.0	102.0	.....	—	—
16.....	101.8	101.6	101.6	101.6	100.5	100.8	101.8	104.0	105.0	+	+
17.....	101.6	101.4	101.6	101.7	104.0	105.2	103.8	105.3	.....	+	+
18.....	101.4	101.8	101.8	101.6	102.9	102.0	102.0	102.8	.....	—	—
19.....	101.5	102.5	102.4	103.0	105.4	104.0	102.7	102.5	.....	+	+
20.....	101.8	102.2	101.0	101.8	104.2	100.8	101.8	101.3	.....	—	—
21.....	104.0	103.8†	.....	.....	.....	.....	.....	.....	.....		+
22.....	103.5	102.1	102.4	101.4	101.2	100.5	102.8	101.7	.....	—	—
23.....	103.7	103.5†	.....	.....	.....	.....	.....	.....	.....		+
24.....	101.8	102.0	101.6	101.8	106.3	105.7	105.1	104.8	.....	+	+
25.....	101.8	102.5	101.3	101.5	101.5	101.3	102.2	102.1	.....	—	+
26.....	103.3	103.0	102.3	101.8	101.6	102.4	102.3	102.1	.....	—	—
27.....	101.9	101.4	101.0	101.1	101.8	101.0	101.3	101.8	.....	—	+

* The initial temperatures were taken two hours previous to and at the time of injection. The dose was two c. c.
† Not injected on account of high initial temperature.

mals seventy-six days after the herd had been subjected to the subcutaneous test. The results of both tests appear in Table II.

It was possible to compare the results of the two tests on twenty-five animals. There was total agreement in twenty-one cases. Of these, ten were positive and eleven were negative. One animal reacted to the subcutaneous test, but not to the intradermal test. Three reacted to the intradermal test that had not reacted to the previous subcutaneous test. This does not necessarily indicate a disagreement, as there is the possibility that infection may have occurred subsequent to the first test.

In making these comparisons we used scrupulous care to exclude any knowledge of the results of the previous subcutaneous test that might influence our judgment in applying the intradermal test. We compared results only after reaching a decision on the intradermal test.

COMPARISON OF SUBCUTANEOUS AND INTRADERMAL TESTS WITH SLAUGHTER.—We are indebted to Dr. C. M. Haring, of the University of California, for opportunity to apply the intradermal test to some cattle previously tested by him with the subcutaneous method, and to check the results by autopsy. The results of the two tests and the autopsy are embodied in Table III.

This shows an agreement in seven of the eight cases, six positive and one negative. One case, number four, which did not react to the subcutaneous test, did react to the intradermal and proved positive on autopsy. This one, of course, might have been infected subsequent to the subcutaneous test.

INTRADERMAL TEST IMMEDIATELY FOLLOWING SUBCUTANEOUS TEST.—Opportunity was afforded to apply the intradermal test to a dairy herd of twenty-two animals five days after the subcutaneous injection of tuberculin. Four had reacted to the subcutaneous test, but none reacted to the intradermal test. The four reacting animals and one non-reactor were slaughtered. The autopsy proved the accuracy of the subcutaneous test.

TABLE III.

Comparison of the Subcutaneous and Intradermal Tests Checked by Autopsy.

No.	Subcutaneous. January 4, 1910. Initial temperature.*	Hour After Injection. 8th.	10th.	12th.	14th.	16th.	18th.	20th.	Intradermal. April 17, 1910. Result.	Result.	Autopsy.
1.....	103.3	103.2	101.8	102.6	104.2	104.8	104.3	104.5	104.9	+	+	+
2.....	102.6	102.4	101.8	102.2	103.6	104.6	104.7	104.8	104.0	+	+	++
3.....	102.3	102.6	102.2	100.6	102.5	103.3	104.6	104.2	104.0	+	+	++
4.....	102.8	102.8	102.6	102.8	101.0	102.4	101.6	101.6	102.0	—	+	+
5.....	102.0	101.6	102.4	102.0	101.6	101.8	102.3	101.4	102.2	—	—	—
6.....	101.3	103.6	104.4	106.2	105.2	105.8	104.9	104.6	104.6	+	+	++
7.....	102.4	102.4	105.8	105.6	106.1	105.9	104.0	.....	.....	+	+	++
8.....	103.3	103.0	104.0	103.6	103.5	102.2	102.4	101.1	.....	+	+	++

* The initial temperatures were taken two hours previous to and at the time of injection.

The results point emphatically to the conclusion that a recent subcutaneous test interferes with the intradermal test.

SUMMARY.—1. We have shown that twenty-eight out of thirty reactions regarded by us as positive, proved positive on autopsy. Of four considered questionable three proved positive on slaughter. Two diagnosed as positive showed no lesions. Fifty-nine considered as non-reactors proved negative on autopsy. Seven classed as negative reactions showed lesions.

2. The determination of a reaction calls for careful discriminating judgment on the part of the operator.

3. With regard to the seven cases of tuberculosis which we failed to recognize by the test, we prefer to attribute these to our own inexperience rather than to a failure of the test.

4. It is the only test so far known that is applicable to range cattle, on the range.

5. In comparing the subcutaneous and intradermal tests we find a remarkably close agreement in results.

6. It requires no modification of the ordinary routine of the animals, except that in range cattle it is necessary to confine them while making the injection and again forty-eight hours later, to make the diagnosis. The time of this confinement is insignificant.

7. The intradermal test applied five days after the subcutaneous test is not reliable.

ON September 22d Dr. C. A. Cary, State Veterinarian of Alabama, had the misfortune to fall from the roof of a new house that he is having constructed next door to his residence, and sustained three fractures; one at the left ankle, one in the left femur, and another in the left radius. Besides these major injuries, the doctor received minor injuries at different places about the body, and consequently has endured much suffering, more than anyone can possibly conceive, but his many friends in the profession throughout the entire country will be relieved to know that he is progressing nicely, that his present condition indicates a complete recovery, and that in the course of a few weeks he will be out attending to his many and important duties.

AN ADDRESS ON THE PRESENT STATUS OF ANIMAL SURGERY IN AMERICA.*

By L. A. Merillat, Professor of Surgery in the Chicago Veterinary College.

Having taken more than a nominal interest in the practice of surgery for some years, it naturally affords me great pleasure and satisfaction to be accorded the privilege of delivering the opening address before the first surgery session ever held by the American Veterinary Medical Association. This innovation is gratifying to me, as it should be to every enthusiastic veterinary practitioner, because it must be interpreted as an indorsement of the work of American veterinary surgeons and also as an indication that we are soon to have a separate surgery section—a section that will highly dignify the other departments into which this association seems destined to be divided, a section that will henceforth enrich the field of surgical knowledge from year to year for the benefit of our countrymen and which will serve in the future as the barometer of the progress of veterinary surgery in America.

Having, however, never deceived myself I shall not attempt to deceive you with any glowing accounts of our achievements, knowing full well that veterinarians have much less to be proud of as surgeons than they have as workers in some of the other departments of the profession; as a casual glance into our status shows that we are not without fault, that we have continued year after year to disobey the commonest laws which govern scientific surgical manipulations, that we have not succeeded in utilizing the whole fund of available knowledge, that we have not expanded the sphere of our usefulness to meet the highest expectations, the highest surgical ideals, and that we have not at-

* Delivered before the forty-seventh annual meeting of the A. V. M. A. at San Francisco, Cal., September, 1910.

tracted the greatest minds of the profession into the surgical ranks.

But we can in a measure at least condone our deficiencies in these several connections in a number of somewhat unfortunate limitations over which there is no adequate control

It is well known that the surgeon who has animals for his patients has a pretty rough and rugged road to travel. He is hindered already in his pre-operative deliberations by the exceedingly difficult problem of diagnosis; he is handicapped in his operative work by the brute strength, the unintelligence and natural uncleanliness of his patients, and he is finally hampered in his post-operative management by their lack of any instinct of self-care or self-protection. And if we add to these obstacles, formidable as they are, formidable as only the experienced surgeon of animals knows, the great magnitude of a major surgical operation scientifically performed upon a large brute, we find some excuse for our contracted domain; we find therein the reasons why we veterinary surgeons are not to-day as freely invading the internal cavities of the body, for example, as the surgeons of human beings.

The low mentality of our patients, the difficulties of operative restraint and of post-operative control, the hazards of anæsthesia, the great cost of sustenance during long periods of convalescence, the filthiness of our patients' bodies and especially of their environments, judged from the standpoint of asepsis, are and I fear always will be discouragingly detrimental to our progress; and while other of you are engaged in solving great problems by which the whole live stock holdings of individuals, of whole communities, of whole states or even of whole nations are protected against plagues and scourges that may threaten to demoralize the whole live stock industry, and often the health and the welfare of the human inhabitants, we surgeons must be content with the humble mission of ameliorating or saving the life of the individual animal whose value is usually too small to create a demand for real scientific surgical work. We seem to have arrived at that point of our progress where we must either deny our patients the

benefits of scientific surgery or else charge up the expense to our sentimental or philanthropic inclinations.

So harmful are these influences against the enlargement of the scope of animal surgery that there is as yet no demand for the specialist from whom an elaboration of our knowledge should come.

On the contrary every practitioner must be more or less of a surgeon himself in order to meet the demands of his daily work; and since his mind is occupied in so many different directions he finds little time to enrich the fund of surgical knowledge by fruitful investigations and research. He finds little opportunity to acquire that knowledge of detail, that degree of skill, that practical experience upon which a successful surgical career actually depends. And unlike the human physician he is denied the opportunity of consultations with the convenient specialist who by reason of a broad experience is capable of performing complicated and intricate operations against disease which the general practitioner can not hope even to diagnose, to prognosticate or meddle with because such specialists do not exist in the veterinary profession.

True, there are a few men amongst us who stand out rather conspicuously as surgeons and there are a few teachers in the various veterinary colleges who, of course, profess to be endowed with a superior variety of surgical skill, but still we can not truthfully say that our ranks are very richly embellished with real surgeons. Although we point proudly to such men as Liautard, now of Paris; Adams and Harger, of Philadelphia, Williams and Udall, of Ithaca; Moore and Anderson, of Kansas City; White, of Nashville; Blattenberg, of Lima; C. A. White, of Chicago; French, of Washington, and other contemporary workers for our advancement, it is plain that these men do not occupy the same relations in the veterinary profession as such men as Mayo, Keen, Morgan, Fowler and others occupied in the profession of human medicine.

In truth the scope of veterinary knowledge has become so broad that the practitioner is actually swamped in the burden he

must carry. As a recent writer has said of the medical student, "He is like a man dragging along an already heavy chain to which new links are frequently being added"; soon he must stop, hopelessly incapable of dragging it farther. So with the veterinarian; he is now burdened with the many links of our science that he can not much longer successfully bear them all. If we were to follow a busy practitioner through a single day we might often find him pitting his knowledge against a number of highly diversified situations. A mysterious epidemic of swine, an uncommon bovine scourge, an unusual equine plague, a dying flock of fowl, a lame horse, a sick dog, a job of dentistry, a case of dystokia may all be encountered in a single day's activities. And if at the end of such a day's labor he attempts to perform a difficult surgical operation, would you not condone his deficiencies?

Here is where we fail as surgeons. Whatever may be our attainments in the science of surgery, we are through lack of experience, through lack of manual training, palpably deficient in the art. To retain the detailed knowledge of comparative anatomy, comparative physiology and pathology, the good surgeon of animals must possess and then to acquire sufficient mechanical facility to put these into successful operation in a number of different species of animals with their different habits and susceptibilities, is in itself sufficient accomplishment for the life of any one man.

And on account of these harmful conditions, an analysis of the position we occupy as surgeons among scientific men brings us face to face with a number of faults, a number of failings, a number of delinquencies that are not pleasing to relate, and if my subsequent remarks seem harsh, if they seem to condemn more than they commend, I trust you will not misconstrue the intent. It is my object to relate conditions as I see them without fear or favor.

Let us first see what has been and what is today our attitude toward the use of anæsthetics. Anæsthesia was discovered in 1846, sixty-four years ago, by W. T. G. Morton, of Boston, a man whose name will live in the ages as one of the greatest benefactors of the human race, if not also of the whole animal king-

dom, and since he received but feeble recognition for his wonderful discovery while he lived, it is but scant justice to pay tribute to his memory whenever the opportunity presents itself. Every man knows the horrors of surgery in the dark days before Morton. A no less celebrated writer than the eminent Scotch surgeon, John Hunter, once described a surgical operation as "A confession of failure that should be used only as a last resort," and I think it was the eminent pathologist Billroth, who, in his blunt German manner, said "A surgical operation is hell for the patient and purgatory for the operator." It is well known that the great and humane surgeons of the pre-anæsthesia era actually shunned and dreaded surgical operations on account of the almost unbearable shrieks and sufferings of their wretched patients. It remained for Morton in the most unexpected manner imaginable to devolve the means by which the most baneful effect of surgery was banished from the operating room forever.

To what extents have the veterinarians availed themselves of this great victory over surgical pain? It is no great credit to the older veterinarians that our history is so replete with evidence of their lethargy toward a more general adoption of anæsthesia. They practiced anæsthesia only as a matter of convenience to occasionally enable them to perform difficult operations, but seldom in the spirit of compassion for their mute, unwilling patients. It remained for the younger generation of veterinarians to bring about a pronounced change of attitude in this regard, but I must shamefully confess that there is still much room for improvement. In the large colleges and in the larger hospitals, the spirit of compassion seems to prevail, but in the general practice there are still too many torturing operations performed without due and sufficient regard for the sufferings we inflict. While we are, of course, justified in inventing ingenious methods of applying direct physical restraint to our patients, we should never allow these to be used as devices of torture, but we should instead remember that anæsthesia is not only the most divine, but it is also the most effectual of all restraints. Without attempting to preach a sermon I beg to suggest that every veterinarian who practices surgery

would heed the fifth passage of the Sermon on the Mount, which says "Blessed are the merciful for they shall receive mercy." Hypocrates fell into the spirit of things when in his earliest writings he said, "To relieve pain is divine"; a motto that has served as the basis of medical ethics for twenty-five centuries. And to this the veterinarian should add, "To inflict preventable pain is inhumane."

The fault has been in our veterinary colleges, where too little attention has been paid to the teaching of practical surgery. The veterinary students of past decades were not taught the use of anæsthetics, but in America since our Department of Agriculture, through its Bureau of Animal Industry, has so thoroughly dictated the surgical curriculum, more attention is now paid to this along with other practical subjects, and the effect is already apparent in the recruits of the past two years.

I was never so proud in my life for being a teacher of animal surgery as the other day when called to the country by a recent graduate to perform an operation upon a large stallion. While I was engaged in assembling and sterilizing the instruments, he cast, secured and anæsthetized the two-thousand pound brute without consulting me as to whether or not that was my plan of procedure. This simple event showed clearly that his conception of a surgical operation includes the administration of an anæsthetic. I thought to myself, what a blessing if every veterinary surgeon in the world could at once be transformed into such a humane, yes, such a good surgeon, as this young practitioner of a few months.

It would be a sin of omission if I neglected to mention the influence this association has been in this regard. Many of you will remember the first clinics of the American Veterinary Medical Association were little more than exhibitions of brutality, but now all the animals operated upon for the edification of its members are handled with more mercy. For this transformation we are indebted largely to the late and lamented Roscoe R. Bell.

Next let us see what we are doing to-day with the teachings of Lister. It is now more than thirty years since Lister, Pasteur

and others announced to the world the greatest scientific discovery of modern times, the discovery that wound diseases are caused by a preventable, external contamination. The theory, for it was then but a theory, was soon heralded throughout the whole civilized world, and it was so rapidly proven to be correct that within a few short years the standard surgical therapeutic and surgical technique of centuries was entirely revolutionized. Operations known to be fatal in every case were made harmless, and the miserable complication of wounds then supposed to be inevitable were universally suppressed. The discovery when put into operation for the first time by surgeons proved too good to be true—the fondest dream of years had at once become a reality. In the words of Prof. Keen, "Daring has become conservatism; rashness has become common sense." Who could predict the effect of this wonderful discovery upon the progress of surgery; what man can reckon the immeasurable saving of life, the incomputable relief of suffering and the opening of new surgical fields, the cranial cavity, the thorax, the abdomen, the intestines, the joints, the eye, the ear, regions and organs which were formerly sacred only to the action of disease and which were inspected only at the post mortem may now be opened freely to the renovating measures of the surgeon and to the full gaze of the student. Eloquent volumes have been written to celebrate these themes; my feeble remarks can but trace its eulogy."

But let us stop and ask, "Has the veterinarian fully appreciated the significance of this great discovery by having put it into practical operation?" Shamefully I am compelled to confess that we have not, except in a humdrum sort of fashion, but certainly never to the fullest possible extent, although we are apparently at the threshold of a new epoch in this connection. For twenty years the veterinary profession entirely ignored asepsis although its merit and worthiness should have been appreciated from the very beginning. And from this unsatisfactory state of affairs we have passed into an epoch that I shall style the epoch of fake-antisepsis. It is the epoch in which we are to-day living and which I so sincerely hope is rapidly drawing to a close. I use the

phrase "fake antisepsis" advisedly and because we are to-day knowingly guilty of practicing faulty methods. Sometimes we fake because we imagine that the practice of asepsis is a useless, a hopeless and an impossible undertaking, and thus we continue year after year to leave our patients to the mercies of preventable complications; but still worse it is very evident that we often fake to mimic the real aseptic procedure if not also to deceive our spectators that we are modern in our work; and how often are we privileged to witness the real scientific operation that will stand the scrutiny of the knowing eye? Very seldom. Why, gentlemen, would it not shock your sensibilities to learn that there are veterinary colleges to-day graduating hundreds whose surgical departments, not content with scoffing, winking at and entirely ignoring asepsis, are actually not provided with any means of sterilizing surgical appurtenances and instruments?

While these facts reflect seriously to our discredit the sooner they are proclaimed the sooner we will mend our ways.

In the spirit of charity I shall admit that the wheels of progress are bound to be slow, because the practice of asepsis in animal surgery is not always a simple performance, often requiring more or less elaborate accommodations and special equipments that are not always at the disposal of the veterinarian when called to operate; but it is indeed remarkable what can be done in this regard if an assiduous effort were made in every case to create that great "germ-free oasis" that has developed from the teachings of Lister and without which the real surgeon refuses even to inflict a wound.

And let me admonish you that if we solicit scientific consecration as surgeons, we must first lay down a foundation for our work upon which is written in the boldest relief that great surgical word "asepsis."

We seem to have progressed as far as possible with our old semi-scientific surgery and now if we entertain an earnest desire to broaden our field of endeavor, to strengthen the prestige of our craft, to earn a position among learned specialists, we must now begin to display a more wholesome respect for the niceties of

asepsis. Some of you may claim here that a fair measure of success can be obtained in veterinary surgery without asepsis, which is true and which I grant freely; but the explanation is found in the ridiculous simplicity of the operations we have thus far dared to perform. If we wish to march onward to more glorious achievements than it has yet been our privilege to enjoy, we must broaden the category of our surgical operation by the addition of those procedures which we would dare to perform under strict asepsis.

And now just a word about hæmostasis. Every surgical operation is of course more or less sanguinary, but we seem to have paid too little attention to the systematic management of bleeding and hæmorrhage. We have been prone to wade through long bloody dissections, leaving the matter of hæmostasis for the last step and then effecting a control of the bleeding by the crude method of compression, either by hurriedly wrapping up the whole region with a taut bandage or else rapidly packing the traumatic cavity with a wadding to be retained with suture, methods which are both unscientific and harmful, methods which can no longer be countenanced in the light of modern surgery. To complete an extensive dissection with the loss of but a handful of blood is an art we do not seem to have acquired; although it is an art, let me assure you, that will play no small part in the destiny of our surgery.

The surgical wound held free from blood by modern methods of hæmostasis, held free of microbian contamination by modern methods of asepsis and inflicted without pain by modern anæsthesia is our only path to that high level now occupied by the art of human surgery. Failing in this we are destined to plod along in the same painful state of mediocrity.

Aside, however, from this pessimistic view of our status, there is the optimistic side that I might have taken for my theme, but which I now have no time to analyze. It is farthest from my mind to assert or even to intimate that we have made no progress. We have only to look at the paltry consideration that surgery received at the hands of this association during the earlier

days of its history, to scan the pages of the annual reports for the desultory essays presented on surgical subjects during the later years, to note the institution of an almost shameful clinic at Omaha in 1898, and then compare these with the work on surgery during the last few years, and you can obtain better than I could otherwise describe, a splendid perspective of the progress of animal surgery in America, if we admit as we all do that the annals of this great association furnish a fairly complete history of the progress of veterinary medicine in this country.

DR. J. M. PARKS, who has stepped from the chair of secretary to that of president of the CHICAGO VETERINARY SOCIETY, after three years in its service in the former capacity, reports that organization in a good healthy condition, with membership steadily increasing; the names of nearly fifty members in good standing now being enrolled. In concluding his letter, the doctor expresses his appreciation of the AMERICAN VETERINARY REVIEW, during his connection with the society as its secretary for the past three years, in the help that it has been to him. In reply the REVIEW wishes the society continued prosperity and a profitable winter's work; the season when most local organizations do their best work. This organization meets the second Tuesday of each month, and should be well attended in a city like Chicago. The other officers are: E. L. Turtman, Vice-President; D. M. Campbell, Secretary, and C. A. White, Treasurer.

THE LITTLE SHETLAND COW. The little Shetland Cow, like the Pony, is an excellent representative of the native breed. If fed for the fat market she would "kill" about 3 cwt. dead weight of beef. If used in the dairy she would yield about two-thirds of the quantity of milk produced by the average Shorthorn. But these Shetland cattle have one qualification to which few of the breeds reared on the mainland of Great Britain can lay claim. Tubercular disease is almost quite unknown among the island cattle. They have to rough it in these wind-swept islands of the North Sea on the borders of the Arctic Ocean, and they offer a practical testimonial to the value and efficacy of the open-air treatment for tubercular patients.—*The Live Stock Journal.*

A NATION'S LOSS—A PROFESSION'S TRIBUTE TO FALLEN LEADERS.*

By W. Horace Hoskins, Philadelphia, Pa.

In the march of progress of this Association and under the impetus of its large and growing membership, there drops from our number from time to time members who have specially laid us unde rgreat obligations. Others who have left some strong impress upon the profession's advancement. Of those of whom I shall speak in the short time accorded me by our secretary, are all men who have passed away and of whom I have had the pleasure of close personal friendship and an intimate knowledge of their worth and work.

Rush Shippen Huidekoper.

Physician, surgeon, veterinarian, horseman, sportsman, soldier, citizen, author, writer, clubman, professor, journalist, society man, gentleman, last, but not least, friend of friends.

Though less than fifty years measured his birth and life work, he crowded it to overflowing with strenuous efforts to serve his country, his state, his profession, and laid at our entire people's feet a debt of lesser or greater magnitude whether they lived in palaces or in the humblest hovel in the land.

A prince of good fellows, lifting all that he touched to a higher plane, whether in the field of sport or the vineyard of labor. A public servant of the highest order whether in the role of physician and surgeon, in the dispensary or in the lanes and alleys of a great city, or in the field of military power and powers aiding the afflicted and suffering or in the military camp as a sanitarian, conserving the health and strength of a nation's young

* Presented to the 47th annual meeting of the A. V. M. A. at San Francisco, Cal., Sept., 1910

blood that had chosen the field of soldier to serve their country and state.

As a teacher and instructor he was as faithful to the students' needs and demands, as loyal to their interests as he was prodigal in robbing his great physical powers of rest and strength. I have known him to fill the role of professor and teacher for three consecutive days and for three nights of the same days, fill the role of nurse and friend at the bedside of one who was near and dear to him, without sleep or rest, except what was gained by an hour's ride on the train; he filled this place with only the thought of duty well performed.

As generous and unselfish in every sphere of life he filled, accompanied as it was, with the charm of modesty and the utmost pleasure of freely giving; he learned and lived how much more blessed it was to give than to receive. His generous, unselfish nature was as highly exemplified as the consultant at the bedside of a patient and as boundless there as at the sumptuous table of peace and plenty, that he loved to provide for those to whom he was attached by bonds of friendship, social or professional relations.

He hated hypocrisy as bitterly as he despised meanness. He had no quarter for the traitor in high or low place. He pitied the former while the latter was the only condition or acts of man that he was ever known to display anger or temper.

Born under the parental roof of luxury and of parentage that carried with it the blood lines of the first families of the land; schooled under private tutorage and select schools; educated in the University of Pennsylvania Medical Department, trained under the tutorage of that great surgeon Agnew; a period of post-graduate work in foreign schools under special privileges, made for his requirement a kind of training that many, many times spoils most men for serious and successful work. With all these aristocratic surroundings his demeanor was of the most modest character, his friendship strong and loyal, his respect for others' opinions and views the most considerate and thoughtful. His gentlemanly demeanor at all times and under all circum-

stances won for him a warm place in the hearts of all whose privilege it was to know him intimately. While serious at most times in demeanor, he could enjoy a joke with all the zest and humor of any man. I recall one morning meeting him as he emerged from his home in the "City of Brotherly Love," having the night before spent a convivial evening with one of his army friends, whom he invited to his home to spend the night. An early morning call to a suburban client compelled him to leave before his friend had arisen, and on his return he proceeded to his room and found his friend seated on the bed, with the most curious night robe hanging in a dozen or more streamers from the neck band to the lower border, and his friend commending the fine traits of character of a beautiful black, French poodle, which Dr. Huidekoper was very proud of. This dog, to show his appreciation of his guest, continued for some thirty minutes to jump up and grasp his friend's night robe and slit it from neck to circumference in a dozen streamers. As he told the story he shook with laughter until his whole frame was convulsed with the ludicrous picture. Dr. Huidekoper was a man of magnificent physical proportions and as heroic in action as he was in strength and physique. The call of duty ever found him ready to respond. With soldierly training he ever seemed to sleep on his arms. When there swept through the land the terrible story of Johnstown's catastrophe, the call of duty found him a few hours later at the post of service, rendering to the living every possible aid that could be given, protecting the dead from the hands of vandals and vultures in human form, bringing order out of chaos, day after day with only a little snatch of sleep now and again. His military training, his knowledge of medicine, his skill as a surgeon, his kindliness of heart, and splendid courage made his services of special worth in such an emergency, and won for him the highest commendations of the people of the Keystone State.

Among his greatest treasures in life and with whom he had formed the greatest companionship, was his famous flea bitten mare "Pandora." Pandora was one of the greatest hunters in Pennsylvania. Her steeplechase achievements were heralded far

and wide. Her famous leaps over the bars and gates of the toll-roads for ten miles out of Baltimore was as equally known as her victory in reaching first a point on the opposite side of a valley, through which flowed a deep and wide stream, while those who raced along the side of one hill to reach the bridge some miles beyond there to cross and retrace their steps on the opposite side of the valley. Apparently outdistancing Pandora, his rivals were already exulting over his defeat. He on the back of Pandora rode down the valley's slope, leaped fence and rail again and again, and then forded the stream, much of which the mare had to swim with her master on her back, and up the other slope he awaited the oncoming of his rivals, who sometime later reached him with jaded steeds, and themselves almost worn out with their own efforts in their struggle to defeat him.

Almost as famous in death as she had been in life, there will ever remain the oft-told story of how he entertained his friends at a sumptuous feast at the famous Philadelphia Club. It was known as the Pandora dinner, and given in her honor to many of those who had rejoiced with him at her many triumphs. After the dinner had been served, and the cigars and coffee reached, he told his guests of the several courses in the feast, where the tenderloin and giblets of Pandora's flesh had been so skillfully and tastefully prepared. It was always a source of regret on his part that a flash light picture could not have been taken of the faces of his guests when they realized that they had dined on horse meat. To this day there are men in that city who can not even yet think of that occasion without some misgiving as to the position of their stomach.

Leonard Pearson.

Devoted student, successful graduate, skilled practitioner, able instructor, patient investigator, eminent public official, true diplomat, profound teacher, sincere friend, strenuously consecrating his life to the broader development of veterinary science. Thrice

blessed indeed is the field of any work for such a man. Stricken indeed, injured beyond the hope of repair, must be the cause, in the loss of such a helper. Timely is the occasion to pay tribute to such a fallen leader. He was not a man without honor in his own country, for he was as deeply loved and admired by those who were closely associated with him in service, as he was honored and appreciated by those at home and abroad who were permitted from time to time to realize and measure the progress of his work, and gaze upon the magnificent plans he unfolded to the world as the triumphant march of veterinary progress. Simplicity and gentleness were as much a part of his daily life among men as were the earnest work, untiring energy, and deep devotion to every aspect of the field of veterinary science, to which he added the touch of progress, advancement and achievements that seemed to be boundless in their limits. His childhood days were idealistic, spent in great part in the loving companionship and tutoring of his saintly mother, for whom he maintained until his untimely death the most profound devotion, tenderest solicitude and loving attentions and in his own life was reflected the gentleness and simplicity that so markedly characterized his attitude toward all with whom he daily came in close communication. His work as an instructor will never die, for men will ever emulate his rich and exemplary life. His fortitude and forbearance will ever be remembered and its softening and benign influences will continue to spread their soothing unction over the body of men who honor and revere his name. As an investigator and his splendid contributions to the field of original research, will ever be a beacon light to the true investigator and a stimulus to the genius of others, for he ever loved to share the glory and renown of his achievements with those who in some part contributed to their successful attainment. As a true diplomat he had accomplished in his adopted state a work in the field of veterinary sanitary control, excelled by no sister state of our union and scarcely equaled by any others. Legislative bodies would come and go, state officials would fulfill their terms of office and others would succeed them, with them all in their turn he won them to his

cause and each successive change was marked by greater advancement, broader lines of work and stronger pecuniary support to the work he advocated and opened up for the welfare of the people of the Commonwealth of Pennsylvania, and established a system that has been many, many times deservedly honored by the name of the Pennsylvania system. Untiring and ceaseless were his labors for our common calling. The goal he sought seemed ever to be just beyond and like the ignis fatuus he bent every energy that he might hasten its accomplishment. Strong and brilliant in mind, powerful and resourceful in his physical strength, bearing the burdens of many, sharing the labors of all with whom he worked and labored, he tried all these powers to the breaking point, and in the seeming hour of his greatest strength, with a more restful period on the viewpoint beyond, he paid the penalty of an overtaxed mind and body and his own state, our country, a nation's profession witnessed the fall of the ablest and greatest leader of his day and generation that our profession has known. As an investigator we owe him a lasting debt of gratitude. We owe him much for the splendid methods he inaugurated. A state farm, where under ordinary farm conditions, the many unsolved problems of our long list of contagious and infectious diseases might be more successfully studied, was one of the earliest of his plans. To Pennsylvania he rendered services of untold value, and when successfully applied there, he modestly, without any ostentatious display, gave the results of his work to the entire world. He gave the name of forage poisoning to one of our most disastrous diseases by proving that it belonged in that category for its development, and brushed away the mystery of that disease as well as the confusion engendered by the names of cerebro-spinal-meningitis, spinal-meningitis, spotted fever, putrid sore throat, etc. A successful practical method of vaccinating cattle, whereby immunity might be given to the greatest and most destructive enemy of our dairies—tuberculosis—made its richest and best progress under his directing mind, while methods for its better control without disturbing the equanimity of a people, found successful fruition at his hands.

Roscoe R. Bell.

Printer, reporter, journalist, student, teacher, professor, eminent practitioner, editor and association builder and supporter.

With all the limitless energy and determination combined with the enthusiasm of early years, our esteemed colleague planned well to fill an important role in the history and development of veterinary science and died in the harness at the period of life that in most men dates the years of their greatest strength and power.

His early life filled with vicissitudes above which he rose by the assertion of manly powers and virtues that fashioned his later life and placed him among the busiest of men and led him to break every law of nature in its inexorable demands for physical rest.

The role of printer and reporter, in early life, well equipped him for the field of journalism that he served so faithfully and zealously in later life.

It early fitted him for the period of studentship in veterinary science to which he attached himself at a time when most men are through with their college career.

The charm of medicine and the allurements of the clinical field of general practice; his love of medicine and his fondness for the mysteries and achievements of therapeutics soon carved out for him one of the largest private practices ever enjoyed by any practitioner in the large cities of our land.

The generous reception given him by his large and wealthy clientage of the "City of Churches" did not win him from a recognized duty he felt he owed his profession and even in the hour of increasing and more exacting demands of his private practice, he gave to the student body of the American Veterinary College a splendid and most profitable course of instruction in Materia Medica and Therapeutics. Back to his first love, ever the tendency of human nature, he found in the journalistic field of the American Veterinary Review, a place of service to which he gave of his time and strength more than a generous

part. These many demands for a larger and larger share of his time for the common good were too often given out of this period of physical rest his many duties sued for, and the warnings of an overtaxed system he failed to acknowledge, that the richest fruits of his fertile mind and his increasing love for his profession might long be enjoyed in richer power and truer wealth.

In the evening of his career that should have been the midday of his services, with waning strength he gave himself unwittingly to higher and better association work, in his state and the city Greater New York, which found its ultimate climax in filling befittingly indeed the highest office in the gift of this association with distinguished honor and ability.

Professor Andrew Smith.

Eminent practitioner, popular teacher, thorough horseman, good citizen, pioneer in veterinary education in Canada.

The death of Andrew Smith removes one of the best known men in our profession in North America.

He had reached the more than three score and ten, of which a half century was given to teaching, and in every part of North America may be found representatives of the school over which he presided for nearly fifty years.

A graduate of the Royal College of Veterinary Surgeons from which body later in life he received additional honors in recognition of his services in the Canadas.

Loved and respected by the student bodies of continuous years, admired by them for his loyalty as a teacher and the solicitous consideration he ever had for their welfare.

The field of the horseman in its broadest and truest sense was one in which he displayed the highest activity, and he looked with the eye of a connoisseur upon their feats of strength and speed with much zest and appreciation.

Filled with the highest civic pride, he filled the role of citizenship in every capacity that added to the welfare, growth and prosperity of his city and country.

All in all, he was a true gentleman, genial in manner, kindly in spirit and knew full well how surely, "The soft answer turneth away wrath."

SIMON J. J. HARGER.

Earnest student, successful graduate, capable instructor, true surgeon, valuable contributor, translator and earnest professor.

I well remember his entrance to the Veterinary Department of the University of Pennsylvania as a student. His modest demeanor, his retiring and reticent disposition were as marked as a student as they were characteristic of his entire life as a practitioner, teacher, surgeon or writer. He sought no vain glory in any place or position. Conscientious, and his own most severe critic, as a teacher and surgeon he filled both these places in a true light. His role was not that of a popular practitioner or surgeon, for the truly scientific aspects always controlled him.

As deeply as was his life work appreciated by the student body for his loyalty and devotion to their needs and his patience with those who find anatomy a difficult subject, the practitioner will long honor his memory for the true word pictures he gave and the uncolored reports he rendered to his colleagues of whatever his pen turned to recount in his own field of surgical experience or investigation.

His work as a clinical instructor was of the richest character and as free from exploitation and deceit as ever characterized the life work of any of our teachers.

A great student, a patient worker, a prodigious reader, made him ever zealous to convey no unsound views or knowledge to the formative period of the student's mind or dangerous field of activity for his colleagues to enter that would endanger a clientage or injure a reputation.

Less than forty-five years of age, he leaves a place in the field of teacher hard to fill; as a writer, a fitting example for all to emulate.

At his death I well recall the words of one of his colleagues when he said that at all times, in all places, and under all circumstances he was ever the true gentleman.

Pennsylvania feels keenly indeed that she has been twice sorely stricken within the past year. Men of the types of Pearson and Harger are many times a state's contribution of many years' growth. And lest we not forget, let us enshrine their memories in the safe keeping of a sorely stricken profession.

THE following from Dr. Harry Norris, Felicity, O.: "Enclosed find post office money order for $3.00, for which please extend my subscription for REVIEW to January, 1911. The information is well worth the money."

THE NATIONAL HORSE SHOW, to be held in New York November 12 to 19, promises to be even a greater success than that of last year, which is remembered with great satisfaction by all whose privilege it was to have attended it. It is really assuming an international character, as competition is expected between French cavalry officers and those of England, Holland, Canada and the United States. More entries have been received up to the time we go to press than had been received at the same date last year, and it is thought by the management that last year's entry list of 1,500 will be exceeded.

WE are indebted to Dr. A. T. Ferguson, of Evansville, Ind., for the following clipping from a western paper which we are not able to credit with it, as the name of the paper was not given: "POPLAR BLUFF, MO., June 28,— A mare, thirty-five years old, aroused its owner, Martin J. Bock, and by its strange actions led him to a pasture at three o'clock Sunday morning. He discovered that the animal had foaled a colt which was an hour or two old. It has been twenty years since this mare foaled before, and probably she is the oldest equine mother in Missouri, if not in the United States." Unusual as it is for a mare to have a colt after a lapse of twenty years since the last one, we knew of a mare that had her *first* colt at thirty-seven years of age and had two others in succeeding years, dropping dead suddenly while grazing soon after the birth of the last one.—[EDITOR.]

MONOLITHS OF COMPARATIVE MEDICINE.*

By W. H. Lynch, D.V.S., Portland, Me.

In selecting a subject upon which to prepare a paper it seems to be customary to show cause why we have decided upon a particular one; and I will say I can show no better cause than that the field of comparative medicine has been well threshed in previous meetings by papers containing reports of cases, outcome of research and the varied phases of our profession described by different members of this association. So finding a subject upon which to write has been no small source of worry to me. It is not easy to find a subject of equal interest to all, but I have chosen the above, for, in the substratum of our mental collection of facts, we all have a collection of monoliths which from time to time have done and continue still to do good service. It is in the hope of extending these limitations, to know there are broader fields, greater breadth, that is knowledge. It is a high privilege to teach, but a higher one to help men teach themselves.

Glancing back a decade or two it is apparent to us all what vast strides Comparative Medicine has made. "Never yet hath anyone attained to such perfection, but that time and place and use have brought addition to his knowledge, or made correction, or admonished him that he was ignorant of much which he had thought he knew."

In the light of latter-day attainments, we smile at our forefathers' tenets, but we in our turn will be held up to derision by those who come after us in this field. The old practitioner acted up to his lights, and all we can do is the same. Yet if we are sufficiently impressed with the fact that we know so little to-day,

* Presented at the mid-summer meeting of the Maine Vet. Med. Ass'n.

with the vast field lying before us for discovery and advancement, we are bound to consider how little we do really know. This makes us discontented and we must perforce strive to gain more knowledge of diagnosis, therapeutics and prophylactics.

Let us consider our methods of diagnosis. The detection of latent disease in an animal by the injection of the products of the causal organism has been used for some time. In tuberculosis and glanders the subcutaneous inoculation of tuberculin or mallein produces certain effects—such as a rise of temperature in a diseased animal and has no effect on a healthy one. These methods are comparatively old; much more recent is the method known as sero-diagnosis.

This method identifies disease by the fact that the serum of the affected animal possesses certain properties not possessed by the healthy animal. The most important discovery regarding diagnosis is the serum agglutination test. By agglutination we mean clumping together masses of bacilli in a medium on the addition of a certain serum. The serum of healthy horses agglutinates bacilli slowly at dilutions below one in three hundred; while the serum of glandered horses is very active in dilutions below one in a thousand, and the phenomenon is demonstrated in solutions as weak as one in sixteen hundred.

Our medical brethren have applied sero-diagnosis in the agglutinative test for typhoid fever, by which means it has been possible to differentiate cases of paratyphoid fever from typhoid, and the occurrence of the former as a distinct disease explains a proportion of the failures of the serum from supposed typhoid patients to clump typhoid bacilli.

This clumping or coagulation of bacilli on the addition of serum is brought about by certain substances called antibodies by Welch who writes of the antagonism of the healthy organism to all sorts of foreign cells, cellular products and derivatives. These substances, either albuminous or like albumin, are produced in the living organism when certain substances are injected capable of producing the necessary reaction, and their mode of antagonism consists in neuralization of poisons and ferments, cessation

of motility of cells or their appendages, destruction or injury of cells, agglutination of cells, precipitation and coagulation. We, therefore, class these bodies by their manifestations into antitoxins, antienzymes, cytotoxins, agglutinins, precipitins and coagulins. All these bodies are in a high degree specific to the nature and source upon which they exert their characteristic effects. At least, they are usually highly specific.

Just recently these specific antibodies have been divided into two groups; in one of which, represented by the antitoxins, the antagonist is a single body; in the other the cytotoxins or cytolysins, the antagonism is due to the two bodies co-operating.

The cytotoxins or cytolysins include among other things the bacteriolysins and the hæmolysins. Of the two bodies which comprise a cytolysin, the one which actually destroys the cells is found in the organism, but requires co-operation of another body produced during the process of immunization. Many names have been given to these cytolitic components. The one which is the specific product of immunization is called the intermediary body, immune body, ambocepter; and the other one the complement.

Diagnosis by means of serum has not become practical for everyday work, and possibly promises much for the future; will, no doubt, be a great success.

By logical steps we come now to therapeutics. We have found good results from treating bacterial diseases by the use of the antitoxins of the bacterium, or by the serum from an immune animal. We give quinine to our patients in cases of malarial parasites. Quinine being possessed of specific action in the human subject, but in our cases, while slightly useful perhaps, is certainly not specific. When I was in South Africa I saw horses affected with what was locally known as billary fever, but which from a careful consideration might better be called equine malaria. I have seen a few western horses in New England showing characteristic signs of malaria. Now this ailment is not caused by the parasite of the genus plasmodeum causing malaria in man, but the genus pyroplasma, which is closely related to the pyroplasma bigeminum and pyrolasma canis, the

former being the parasite which causes the disease known as Texas fever; and the latter causing the malignant jaundice of dogs—a disease often seen in South Africa, but seldom seen here.

Here is a triad of diseases caused by similar organisms; belonging to a type related to the one causing malaria in man, and while quinine acts specifically for man in the similar diseases it has only a slight effect. The remedy which we found effective in South Africa for equine malaria was ammonium chloride.

Quinine and ammonium chloride are two very dissimilar drugs. In the other diseases, Texas fever and malignant jaundice of the dog, no especial line of treatment seems to have been followed, many agents being used with indifferent success. The point of this is that up to now, we have nothing in the way of medicine upon which we can place any faith. Antitoxins cannot be procured from this class of malarial parasite, so that is another line of treatment closed.

Then we have left the method of combating the disease by destroying the intermediate bearers of the pyroplasmata. This is a tick—the bo-ophilus bovis in the Texas fever; hence by destroying the ticks upon an affected animal, even if his blood has numerous parasites, the disease is prevented from spreading; and although our knowledge is limited upon several things in connection with this disease, I think it is only a question of time when we will be in possession of most of the facts of Texas fever and similar ills.

In stamping out Texas fever, the farmers tried for years—are still trying to destroy the ticks. Once the ticks were all destroyed it follows the disease would be unknown; but since there is still Texas fever, the ticks are presumably still living in numbers enough to cause trouble. Since then we are unable to stamp out this disease by killing the ticks, we must try another alternative. The alternative found most successful is the production of a mild attack of the disease, rendering the animal immune. The inoculation of the virulent blood which gives the disease must be in such a manner that it will not bring on a fatal attack, nor be too weak to protect. This was the problem they were trying to

solve in South Africa a few years ago when I was with the Remount Commission there.

I think we are on the eve of making great discoveries concerning the role played by ticks, arachnoids and insects in reference to these diseases.

In referring to the therapeutical action of antitoxins and sera as the object of scientific treatment, the question arises, what are these substances which act antagonistically towards either the bacteria themselves or their detrimental products, and whence do they come?

The bacterial immunizing subjects have their origin in the lymphatic glands, spleen and bone marrow, and they are complex molecules, not modified bacterial substances nor combinations of bacterial products with the albuminoids of the organism. They make up a part of the organism and help in the vital processes. Their appearance in the blood at the time of the immunization ought to be considered a specific excitation causing a specific secretion. They act chemically and physically like ferments, forming no part of the globulin or albumin of the blood. Their sort of ferment is demonstrated by bacteriolysis. The immunizing substances incorporated with the bacterial cells find themselves free and active at the end of the dissolution of the bacterial protoplasm, after the fashion of true ferments. The bacteriolytic action of the normal body fluids is not due to a single alexin, but a combined action of ambocepter and complement. The term resistance applied to the phenomenon rests above all on a considerable afflus of the body fluids rich in ambocepters towards the place of infection, caused by inflammation. The best known antitoxin in all probability is the antidiphtheritic serum used generally for human subjects, but which I have found to be of service in avian diphtheria or the common roup of fowls in stopping and controlling spread of this malady through a flock of common poultry; the organism causing this disease being found to be similar to the bacillus of diphtheria.

This antitoxin is prepared by injecting a horse with weakened cultures of the Klebs-Loeffler bacillus or suitable doses of diph-

theria toxin which causes a feverish reaction, which soon passes away, leaving the animal less susceptible to the bacilli; the serum of the horse being finally drawn off and preserved. Then this antitoxin has the power to make immune by being introduced into the organism previous to attacks of diphtheria, and is of great value in attacks.

For the classes of diseases with which we come into contact there is a large group of antitoxins which are used with more or less success by the veterinarians. We have antistreptococcic, antitetanic, antirinderpest, and antidistemper bacteriolytic sera.

When I speak of antitoxins I grow enthusiastic. I may be over sanguine, but I have had such good results from this class of agents that I have great faith. Both antitetanic and antistreptococcic sera have for me restored animals to health and usefulness that were practically moribund. The future of serotherapy looks bright with promise to me, and I think will prove epochal if not revolutionary in comparative medicine.

With all this it is perhaps better that we make animals immune to disease when it can be done by vaccines and prophylactics. I have been advising my clients who have me to do operations on young dogs to make them immune to distemper by vaccination, as it seems too bad after one has been to expense for them, to have them enfeebled as they often are after an attack of distemper with some of the distemper sequelæ, paraplegia, epilepsy, et cetera.

Distemper attacks young dogs and epizootic gastritis is found in old dogs, being two widely dissimilar diseases, yet are caused by the same organism, one of the pasteurella group; these discoveries greatly simplifying the former complexities. Going further it has been found that one organism was responsible for pink-eye and contagious pleuro-pneumonia. Of course there is always the hypothesis of mixed infection, but I have noticed the interchangeability of pink eye and contagious pneumonia.

We now know that the diplococcus of Schutz which causes pleuro-pneumonia is identical with the streptococcus of strangles. This illustrates what we may yet find to be true of many of the

diseases of our dumb friends. I believe we may congratulate ourselves on the amount of knowledge we have regarding their ailments, but keep a watchful eye on the unknown, that all of us do his part toward lessening the unknown till we conquer disease. None of us may see that time, but it is logically coming. Men are growing wiser and stronger on all lines year by year, hence they will come to know the scope of the work of the Doctor of Comparative Science, whose function should not redound simply to the economic advantage of the stock owner, but who aims to annihilate the diseases directly transmissible to man, thus protecting human life by destruction of parasitic and contagious organisms.

Much of the work of the veterinarian is to prevent disease; the physician relieves it in incipient and advanced stages. The position of the veterinarian as a safeguard of public health is not appreciated by the generality, but the time is coming when his great value will be recognized, and he regarded as an indispensable factor in every community, working in harmony with the physician to relieve suffering and save lives.

In the times to come the veterinary profession will be represented on every Board of Health in cities, towns and states. Every medical school that is worth while will have in its faculty Comparative Pathology and Comparative Medicine. Then will the position and the high plane and scope of his work be universally recognized.

N. B.—Attention is directed to the fact that all mail intended for the secretary's office of the A. V. M. A. should be addressed to Dr. C. J. Marshall, Secretary, Thirty-ninth street and Woodland avenue, Philadelphia, Pa.

WITH the compliments of Dr. Jas. B. Paige, we are recently in receipt of a pamphlet on SPOROTHRIX AND EPIZOOTIC LYMPHANGITIS, by Calvin Gates Page, M.D., and Langdon Frothingham, M.D.V., of the Bacteriological Laboratory, Harvard Medical School, Boston, and James B. Paige, B.S.C., D.V.S., Professor of Veterinary Science, Massachusetts Agricultural College, Amherst, Mass., illustrated by some excellent insert plates from the *Journal of Medical Research*.

AZOTURIA*

By D. W. Cochran, New York, N. Y.

Azoturia signifies an arrest of locomotion caused by paralysis of the limbs of either the anterior or posterior extremities, together with a morbid change in the character of the urine.

It is a well-recognized disease peculiar to the horse. It may exist in the mule. I have never seen a case in my experience.

It is a disease of the well-kept horse. It does not occur in poor, neglected horses. It is a disease of plethora. It comes on in young, vigorous animals, when growth and development are proceeding rapidly, occasionally or rarely in horses of advanced age.

It is called by some authors a blood disease. Some a nervous disease. I think it is primarily a blood disease for the physiological relations of the blood to the solid parts being so intimate, it is to be expected that pathological changes in the blood, would give corresponding morbid phenomena in the organs and tissues of the body.

Our knowledge of the susceptibility of the nervous system to morbid influences derived from an abnormal composition of the blood and especially of the "effects" of the toxical principles of the blood due to an accumulation of poisons in the system may be illustrated by the injection of some powerful nerve stimulant, as strychnine and aconite into the blood. The nervous system responds very promptly to their physiological toxical action.

The history of one case is about the same for all. We get a great many cases in cold weather. Almost in an epizootic form about the Christmas and New Year holidays. The working

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horses have had a couple of days idleness. They have been fed, the same as though they were working steadily, very often less, but they get no exercise in the meantime. Here we have two factors—idleness and rich feed. The equilibrium between waste and repair is suspended, and plethora is established, at the expense of the various excretory channels, which seem to have become inactive through " engorgement."

This is a fact which we do not recognize, nor can we by any physical means, until the horse has been driven for about one hour or the distance of five or six miles. He starts from the stable in the best of health and condition, vigorous and robust.

After being driven for an hour or thereabouts, a change is noted. He begins to hang back, begins to perspire freely, a cloud of steam arising from his body. We have now a period of great excitement. He exhibits a hurried respiration. An anxious look, he suddenly becomes very lame in one hind leg. He stops altogether, he trembles all over, looks around at his side; acts as though he had colicky pains, his back becomes arched. Inability or loss of control of the muscles of the stifle. He begins to knuckle at the fetlock. Stands in this position for a few seconds and then falls to the pavement, he again arises on his forward legs, drags himself along on his flexed posterior knuckles and falls again prostrated. He will struggle violently. He becomes delirious and is uncontrollable. He often lays in the street in this condition for hours. He is all covered with mud and slush, often laying in piles of snow. The attendants exhausted trying to keep him under control; about this time an ambulance arrives only to add to the existing excitement, he is pulled and hauled and loaded on a platform and dragged in and out of the ambulance before he can be put under treatment. The period of excitement through which he just passed generally leaves him in such a state that treatment is hardly of any avail. The treatment which is resorted to on the street is only palliative, generally a hypodermic injection of morphine.

In a few cases the driver of the horse will notice that his horse is becoming affected (and most all of them at the present

time know) and will hurry him off to the nearest stable and get him off the street. If immediate treatment can be administered they often make good recoveries.

PATHOLOGY.—Under this head while the inquiry will lead to a confession of the imperfection of our existing knowledge, the post mortem does not reveal anything to base a conclusion on. The clinical symptoms are recognized by cramp or convulsive spasms of the muscles of superior spinal region. The muscles of the gluteal region, paralysis of one or both posterior extremities. We have also one ever-present condition. A coffee-colored urine which he may expel himself if he will stand long enough on one leg, or we may resort to catheterization or to pressure on the surface of the bladder.

This coffee-colored urine while it is a constant condition, symptomatic of this disease, is also noticed in other diseases. In this disease it is a condition of plethora. In other diseases that of anaemia. This history in both cases will be different. In the dark-colored urine of azoturia we have a condition due to a plethoric state of the vascular system which is favorable to some form of haemorrhage. This may be predisposed by overfeeding, sedentary habits or other causes of plethora. It occurs about the time when growth and development are proceeding rapidly. It has been supposed to be due to red blood corpuscles becoming disintegrated and dissolved or to a nervous disturbance leading to dilatation of the renal vessels with the consequent escape of some of their contents without rupture, or it is probable some may break down and become dissolved. It may be due to an obstruction in the ureters or to a retention of urine in the bladder. A uraemic poisoning may occur due to an accumulation in the blood. The circulation of which through the nervous and muscular systems lead to cerebral symptoms.

As has been stated a couple of days' idleness, rich food, and no exercise, in a young, vigorous animal are the three factors which are the causes of the invasion of this disorder. While, on the other hand, a horse might stand in his stable for two weeks

or two months under the same conditions and have no bad results. Two or three days seem to be more unfavorable than two or three weeks or months.

DIAGNOSIS.—Generally very plain, occasionally very obscure. There are times when it will require some close attention and study to make a diagnosis. In a mild form, it might be taken for a case of a colic; there may be only occasional flexion of ankles or none at all; there might be noticed a slight giving away at the stifles or a slight hardening of the muscles of the gluteal region. He may remain in this shape for half an hour or more, he will lay down and get up often and then suddenly develop the pronounced symptoms of azoturia; or again, a horse may come in lame from an injury to the elbow or stifle and show some of the symptoms of azoturia. We have also another type of horse to deal with which may often mislead. A horse that is not in the habit of lying down while in the stable. If this horse falls in the street he may make a good many unsuccessful attempts to rise, very often after laying in the street for a couple of hours and resting he will get up with assistance and walk home; but in a genuine case of azoturia, the differential diagnosis is easily established. We have our history and the dark-colored urine.

PROGNOSIS.—Either satisfactory or very grave. A great deal will depend on the intensity of the invasion. The degree of excitement or delirium and the rigidity of the muscular lesions involved. It is a disease of a great many presentations. Environment has as much to do with the successful treatment of this disease as almost any other disease. The style and temperament of the horse is also to be taken into account. The successful form of treatment of this disease in one locality will give negative results in another part of the country. In my locality a horse that is under treatment if, after twenty-four hours subsequent to his arrival at the hospital, he shows no delirium we can give a favorable prognosis. The main object is to control the delirium. If we can not get this under control our horse goes on to a rapid

dissolution. If the delirium abates we may have a complete or incomplete recovery.

SEQUELÆ.—In cases of complete or incomplete recovery, about one of the first things we will have to contend with will be bed sores of an extraordinary character. There will be great sloughs of muscular tissue at the angle of the ileum, at the coxo femoral articulation, at the stifle, at the elbow and injuries to the head. Another condition I have met with has been laminitis. I have had a hernia of the soles of both hind feet. I have had a malformation of both hind feet. The one which he has stood on, large and flat, the other small contracted. I have seen large osseous deposits in the hock from the same causes. Then also we have a great wasting away of the muscles of the patellar region due to nerve paralysis; he has absolutely no use of this limb. He may remain in this condition for an indefinite period. Some cases over a year before normal conditions are re-established. Nature does all the work. No treatment in my hands seems to be effectual in hastening a favorable termination. Another condition I have noticed in some horses. There has been a permanent structural change, horses with sway backs and long hips have changed to arched backs and dropped hips.

TREATMENT.—The plan of treatment which I have resorted to for over thirty years has given me some good results. I have never had a failure whenever I was able to administer the treatment quickly. On the other hand, I know I have lost many horses where prompt action was not obtained.

The plan of treatment is symptomatic—treat the cause. As this is a disease of plethora or engorgement, the treatment should be by rapid depletion. I say rapid, for this disease runs such a rapid course; medicinal agents alone will not give results. If a horse will stand on his front legs or can be held in a standing position for a couple of minutes until I have extracted ten or twelve quarts of blood from the jugular vein, and then follow this up with a large aloetic bolus, I have the most of my work

done. The copious bleeding seems to relieve cerebral congestion. My horse lies quiet and the medicinal agents act more promptly and urination is accomplished voluntarily. The supplemental treatment is warm water enemas and a careful watch as to the comfort of the patient.

In cases of anterior azorturia I would strongly advise the use of slings. In my opinion slings do more harm than good in posterior azoturia.

One invasion does not give immunity to a second invasion. I have had a horse with three attacks.

THE September issue of the *Journal of the U. S. Cavalry Association* contains an article by Veterinarian Olaf Schwarzkopf, entitled "The Structure and Functions of the Horse's Back and Their Relation to the Form and Use of the Military Saddle," and another by Dr. G. E. Griffin on "The Training of the Polo Pony," which proves that the doctor is a good judge of horse nature and an apt teacher of our charge, a knowledge so helpful and appreciated in the career of the army veterinarian.

THE *Berliner Thierarztliche Wochenschrift* gives an extract of an article by Dr. Kersten, Staff Veterinarian in a Bavarian Cavalry Regiment on the result of the examination of refracture of the eye of army horses made by means of the skiascope. Of one hundred horses so examined, 55 per cent. were myopic, 10 per cent. hypermetropic and 6 per cent. anisotropic, so that only 29 per cent. of the horses examined had normal sight. Later he examined 748 horses of a regiment. Of fifty-eight horses reported as shying, twenty had sclerosis of the lense and were myopic. He personally tried the different classes of horses under saddle to ascertain whether they had any characteristic action or behavior on account of their defective eyesight. He found that myopic horses invariably shy at near objects, often unexpectedly, while hypermetropic horses are liable to hesitate in advancing towards objects, approaching at a distance. The myopic horses were all more or less unsafe jumpers. None of the horses with normal eyesight actually shyed, but a few of timid nature were close observers of the surroundings that were new to them, purposely selected for the trial.

EXPERIMENTS WITH SALUNGUENE--EXTERNAL SALICYLIC MEDICATION.*

By Ehinger, D.V.S., Neu Ulm, A. D.

Salicylic medication assumed unheard of proportions after the report on salicylic acid by Bertagnini, in 1855, and the successful decomposition of the acid by Kolbe, in 1874, into carbolic and carbonic acids; the ensuing clinical tests soon demonstrated its exceedingly favorable results in rheumatism and diseases of the joints. Its internal use in various chemical combinations usually was attended by annoying disturbances of the gastric, nervous or urinary systems, and this fact led Ruel and Bourget to try external applications, thus avoiding the alimentary tract. Extended research proved that absorption of salicylic acid through the skin does take place, owing to the volatile nature of the acid at the body temperature. With the discovery of the special keratolytic action of salicylic acid, there was manifested its peculiar power to penetrate through the skin into the lymph and blood circulation, and thus to act directly on the diseased parts. This property is inherent in but few remedies to a like degree. The resistance to penetration naturally exerted by the skin was overcome by the chemical union of appropriate substances with salicylic acid. Oil and fat solubility of such combinations, together with the lytic action of salicylic acid itself, must open the way through the skin to the lymph and blood circulation of cutis and subcutis. Thus was absorption of salicylic acid attained, the process being naturally most evident at the immediate point of application.

In endeavoring to meet the desire for as complete an absorption of salicylic acid through the skin as possible, Sterling and Bourget determined that a chief factor is the vehicle used for

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(*Berl Tieraerztl. Woch.*, No. 36, 1910.)

the solution, or the combination of salicylic acid, involving both the rapidity and the degree of absorption. The vehicles in use are: watery, alcoholic, etheral and oily solutions, fatty solutions, the saponiments, the recent vasols, vasogene and soapy substances. Of these the most generally accepted are the vasols and vasogene, since they combine medicinal agents to a greater extent and are more rapidly and more completely taken up through the skin.

In the unceasing attempt to obtain better and cheaper remedial agents success has only recently been attained in combining salicylic acid and its esters with soapy substances. Such a product of modern chemical research is Salunguene, a superfatted salicylic soap which embodies twelve per cent. salicylic acid and twelve per cent. salicylic acid esters, the acid being free and so especially available in therapeutics.

Salunguene is used externally only, is a specific in acute articular rheumatism, acute and chronic muscular rheumatism (lumbago, torticollis), neuritis rheumatica, etc., and has found general application in such cases. Hence my interest was directed mainly to determine whether this percutaneous use of salicylic acid is followed by any appreciable absorption of salicylic acid through the skin of animals. I tried to determine how soon after inunction salicylic acid appeared in the urine, together with the amount absorbed, as shown by the ferric chlorid reaction. Further, I observed the duration of elimination by the urine as indicating the period of efficacy of the salicylic acid in the body, and also the degree to which the skin was affected by the Salunguene.

The tests were made in horses, cattle, sheep, dogs and rabbits. Gradually increasing doses at short intervals, with the iron chlorid test, gave accurate data in regard to the elimination of salicylic acid through the urine, its degree and duration. This is of especial importance as establishing the exact dose and its probable intensity of action in the individual case.

My results showed a surprisingly large resorption of Salunguene through the skin, the use of a proper amount being fol-

lowed within an hour by the presence of salicylic acid in the urine. A further merit of Salunguene is its slight and pleasant odor; its stability, which ensures more complete absorption. This was epecially evident where large quantities were used, the pungent odor of volatile salicylic acid being absent, though no attempt was made to limit this by protective dressings. This feature is important in the treatment of the larger domestic animals or where the remedy must be applied to extensive areas in rheumatism, in which the application of a protective dressing is not practical.

The experiments showed further that average doses of 0.03 grm. in the larger, 0.3 grm. for the smaller domestic animals per kilo body weight, were eliminated in thirty hours. Larger doses did not require an appreciably longer time. Only a larger amount was absorbed and thrown out in the urine. The smallest amounts giving confirmation of the resorption of salicylic acid were:

In the horse..... 0.016 g. per kilo body weight
In the cow..... 0.013 g. per kilo body weight
In the sheep..... 0.008 g. per kilo body weight
In the dog..... 0.017 g. per kilo body weight
In the rabbit..... 0.04 g. per kilo body weight

In no case was the application followed by any irritation of the skin, even where the dosage was high; the procedure itself was simple and pleasant, since most of the Salunguene is at once taken up by the skin. Important, too, is the fact that with proper closure of the container Salunguene keeps indefinitely, as I had occasion to note during more than a year. Heat, of course, favors loss of therapeutic power, but this can easily be avoided; cold has no influence.

My interest in the subject was aroused by Professor Gwenier, of Giessen, and in view of the many excellent results obtained with Salunguene my observations are bound to prove of service in extending the use of this very valuable preparation by veterinary practitioners.

SHOULD WE DISCARD "BOOPHILUS" FOR "MARGAROPUS"?

By D. E. Salmon, D. V. M., Montevideo, Urugury.

In my article entitled "The Eradication of the Cattle Tick," published in the March number of the Review, the name *Margaropus* was used throughout for the tick which has become so familiar to American veterinarians as the *Boophilus*. This was done because of the statements of the entomologists that the change was required by the law of priority. Our Amreican authority, Nathan Banks, says, for example, "The replacement of the familiar *Boophilus* by this almost unknown name is a case where the inflexible application of the law of priority is greatly to be deplored, especially since there is no resulting benefit whatever to science" (A Revision of the Ixodoidae, or Ticks, of the United States, p. 36).

That the change from the familiar *Boophilus* to the unknown *Margaropus* is deplorable, veterinarians will be even more disposed to admit than are entomologists, and for that reason it is not too late to inquire if even the "inflexible" application of the law of priority requires such a change. While I have not seen the single representative of the species *Margaropus Winthemi* Karsch, 1879, examined by Neumann, and which appears to be the only specimen in existence, I am not disposed to accept it, from the descriptions which have been written, as belonging to the same genus as the *Boophilus*. The marked enlargement of the femur, the tibia and the protarsus in legs II., III. and IV., which is a character not seen in the *Boophilus*, is, for me, a sufficient reason to decline to accept it as belonging to the same genus.

Dönitz, who had reviewed this type, is disposed, according to Blanchard, to consider it as belonging to the same species as

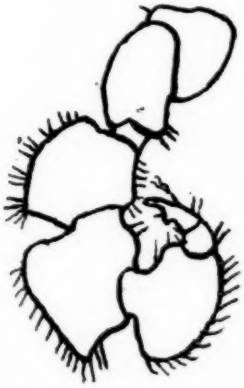

FIG. 1. Leg IV, *Margaropus Lounsburyi* (after Blanchard).

FIG. 2. Leg IV, *Boophilus annulatus* (after Salmon and Stiles).

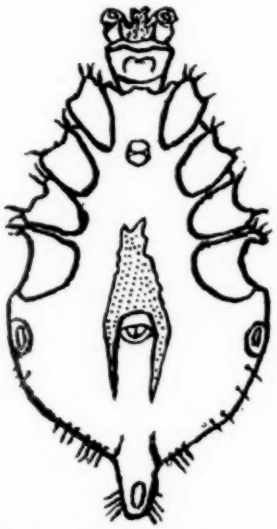

FIG. 3, Anal plate of *Margaropus Lounsburyi* (after Blanchard).

FIG. 4. Anal plates of *Boophilus annulatus* (after Salmon and Stiles).

the *Margaropus Lounsburyi,* and in this view Blanchard evidently concurs, since he retains both of the genera, *Boophilus* and *Margaropus,* and says of the latter that it contains "two

species only, perhaps reducible to a single one" (L'Insecte et L'Infection, Fasc. 1, p. 115).

After examining descriptions and drawings of the *Margaropus Lounsburyi,* it is clear to me that it should not be put in the same genus as the *Boophilus annalatus,* for not only the legs differ remarkably (compare figures 1 and 2), but the anal plates are entirely different, both in situation and number (figures 3 and 4). In the one case there is a single anal plate situated in front of the anus with a narrow prong projecting posteriorly on each side of the anal opening; in the other case four nearly equal anal plates reaching, and sometiems projecting beyond the posterior margin of the body.

For these reasons, I shall hereafter follow the example of Blanchard and use the name *Boophilus,* and hope that veterinarians generally will do the same. As a rule, I am willing to admit that entomologists are the proper authorities on entomological subjects, but recently they seem to have shown an over-anxiety to change old-established names in order to adhere "inflexibly" to the law of priority. By such changes they have sometimes, as in this case, caused much inconvenience and confusion in kindred sciences. It appears evident that the change from *Boophilus* to *Margaropus* was made without sufficient consideration, just as was the attempted change from *Boophilus* to *Rhipicephalus* a few years ago. Let us hope that more conservatism may prevail in these matters and that the law of priority will not be appealed to in order to justify changes that this law does not require.

Dr. D. E. Salmon, former Chief of the Bureau of Animal Industry, U. S. A., is Director of the Veterinary School, Montevidio, Uruguay.

Dr. E. H. Aicher, class 1910, Division Veterinary Science, Colorado Agricultural College, has been appointed Assistant State Veterinarian of Mississippi. The doctor's work will be chiefly the preparation of hog cholera serum.

A MISTAKEN DIAGNOSIS.*

By W. B. Switzer, Oswego, N. Y.

When called upon to furnish a paper for this meeting, I hardly knew what subject to select, but I finally decided to give you a report of a case that came to me one year ago this present month. From the title I have chosen, "A Mistaken Diagnosis," I think I can almost hear some of you say, "Some poor fellow is about to get scorched for making a mistake." Let me assure you, the mistake being my own, that no one will receive unjust criticism.

One day, about August 1, 1909, while in Fulton, N. Y., Mr. W. G. Blakeman, of Little Utica, N. Y., called my attention to a bunch on the neck of a chestnut gelding which he owned. The horse weighed about 1,000 pounds. The bunch was situate about midway of the side of the neck, of about the size of a cocoanut and caused the horse to carry his head a little to one side. Upon careful manipulation I found a tumor, very firm and hard, and to a slight extent movable, between the muscles of the neck.

Upon asking for a history of the case, Mr. Blakeman said that he bought the horse five years before, a four-year-old colt at that time. He had had the horse but a few days when, while cleaning him off, he noticed a small bunch about the size of a walnut in the location described above. He watched it, and after a time made up his mind that it was growing, which it continued to do until the time of my examination. After careful consideration, I diagnosed it to be, in my best judgment, a cold abscess with a fibrous capsule. The extreme solidity of the

* Presented to the N. Y. S. V. M. S. Ithaca Aug. 1910

bunch made me quite sure that it had quite a heavy fibrous capsule.

On August 9, following, Mr. Blakeman drove the horse to my infirmary and made arrangements for an operation, which I told him I thought could be made successfully. On the following morning, August 10, we placed the horse on the operating table, chloroformed him, shaved the neck and carefully disinfected the parts. I then made a four-inch incision along the lower border of the tumor and lengthwise of the neck, cutting through the skin and the upper border of the Levator Humero muscle. I continued to cut until the depth of the incision in red muscular tissue surprised me, but after one more careful stroke of scalpel, I made an opening of one-half inch in length. To my surprise, blood spurted forth to the full size of the opening, and continued to bleed profusely. I saw that I must get to the source of the hemorrhage and stop it at once or the animal would die. I enlarged my opening until I could get three fingers in and then removed two and one-half pounds of thick, clotted blood, very dark in color. The flow of blood was so great that I could not, with the aid of Mr. Russel Guile (now a student of our esteemed State Veterinary College), as an assistant, keep the blood sponged away sufficiently to find the source. As the horse lay on his side, the cavity was a pond of blood, constantly boiling over. We quickly set the table up and thus let the cavity empty itself. I then found the leak to be a rupture of the superior cervical artery. This I took up and ligated with catgut by passing a curved needle beneath the artery. The wound at once became comparatively dry.

After the horse was safely in the stall, with his head tied in an elevated position, the owner told me that he had taken the horse to another veterinarian about one and one-half years before I saw the case and that the veterinarian had inserted a hollow needle into the bunch. Upon finding that the blood flowed freely, he withdrew the needle and told the owner that it was not ripe enough to open. He then put a blister over it and

told the owner to come back when it was ripe and that he would then open it. Mr Blakeman did not take the horse back again.

The horse was left with me until August 22, when the cavity was greatly reduced. A complete recovery was had and the only trace of the trouble which could be observed at the end of a year was the roughness of the hair resulting from the blister. This seemed a very remarkable case to me on account of the long continuance of this leakage.

THE University of Pennsylvania Veterinary School materially strengthened its curriculum this year by the addition to its teaching staff of Dr. Karl Friedrich Meyer as Assistant Professor of Veterinary Pathology. Dr. Meyer received his veterinary degree (D. V. M.) in Zurich in 1908, after seven years of study. From 1901 to 1902 he studied zoology and biology under the faculty of the Department of Philosophy at the University of Bale, Switzerland, his birthplace; then entering the University of Zurich, he continued his studies in zoology and comparative anatomy, and also took up the study of veterinary medicine, taking special courses in the laboratories under Prof. D. A. Lang. In 1904 he took special laboratory courses in chemistry under Prof. von Mueller and Prof. E. Meyer and special laboratory work in pathology under Prof. Kitt. Then, after a brief visit to the bacteriological and veterinary institutes of Vienna, he entered the University at Berne, where he received his federal state diploma. At Berne he became assistant to Prof. Ernst Hess, and later to Prof. Kolle in the Berne Institute for the Study of Infectious Diseases. Dr. Meyer came to the U. P. Veterinary School direct from the Transvaal, South Africa, where for the past two years he has been pathologist for the Department of Agriculture. Dr. Wm. J. Lentz has been appointed to fill the Chair of Anatomy for the ensuing year, succeeding Dr. S. J. J. Harger who died just before the opening of the school. Dr. Lentz is Assistant Professor of Surgery and Obstetrics in this institution, which title he still retains, although for this year he occupies the Chair of Anatomy. Dr. Lentz for several years assisted Dr. Harger and has consented to carry on his work for the present year. Dr. Lentz is a native of Philadelphia and obtained his preliminary education at the Philadelphia High School. He School of Veterinary Medicine, and has been identified with the school since his graduation.

IMMUNITY IN YOUNG PIGS FROM CHOLERA IMMUNE SOWS.*

By M. H. Reynolds, St. Paul, Minn.

Work at the Minnesota Experiment Station in connection with efforts to develop a cheaper and simpler method of immunizing hogs against cholera, has indicated during the past two years that young pigs from immune sows are highly immune to cholera inoculation, and that if such young pigs are not inoculated, this immunity is gradually lost. Inoculation with virulent blood during this immune period has given us permanent immunity; but pen exposure while nursing has not given satisfactory results.

We have done a considerable amount of work with young pigs from immune sows from many sources, with a very high percentage (practically all) of such young pigs, showing immunity under inoculation with highly virulent blood.

This seems to have developed a new principle and to offer great possibilities in the way of hog cholera vaccination work. If others have previously published results of work in this line, the writers would be glad to learn of it and to give due credit. We have done a small amount of work with pigs from susceptible sows which indicates that their pigs do not have any important immunity at birth, but have not done enough of this work to justify any conclusion. The duration of immunity for pigs of immune sows is a point which we are studying. Immunity for virulent blood inoculation seems to persist until more than five weeks of age.

We have done careful work with 88 pigs from 23 sows immunized by reason of having passed through outbreaks with a relatively insignificant loss from cholera in inoculated pigs.

*Credit for the original idea and general plan of this work belongs to Reynolds; credit for carrying out much of the original plan and for many helpful suggestions and criticisms and credit for the record work belongs largely to Beach.

Whether sows immunized by the serum-simultaneous Dorset-Niles method will produce pigs having such immunity at birth, we do not know; but have work under way which we hope will give reliable information on this point, when finished.

We do not know, as yet, that sow pigs inoculated with virulent blood while very young, will in turn produce in the next generation pigs having high immunity; but have some data which gives probability that this may be true. Nine pigs from two such sows have been tested and all proved immune to high virulence blood. Pigs from a third such sow are now under test.

The duration of immunity conferred on very young pigs by direct inoculation is a point concerning which we do not have sufficient data to justify an opinion, but this has been tested in one of our older litters with result that three pigs, two inoculated and one of the same litter, a check, kept until mature, showed by virulent blood inoculation that the check pig was very susceptible and died promptly; whereas the mates inoculated with virulent blood as very small suckling pigs continued in perfect health and later received the very large dose of virus required for hyperimmunizing.

It seems that this general principle may be developed into vaccination work of great practical importance.

Our work will probably be published within a few months as a Station bulletin and will report work done with young pigs from immune sows inoculated at from two weeks to sixteen weeks of age; it will report work done with pigs weaned and unweaned belonging to the same litter and inoculated at varying ages; also some inoculation work with pigs from susceptible sows.

In renewing his subscription to the Review, Horace B. F. Jervis, of Moulton, Me., says: "It is with pleasure that I enclose check for $3.00 for continuance of my subscription to your inestimable journal. It is a means whereby any veterinarian can keep posted right up to date in any and all branches of the great profession that we have the honor to belong."

IMPACTION FROM ALFALFA HAY.*

By J. W. McGinnis, D.V.S., Maywood, Neb.

The reason I selected this subject is that in our study of alfalfa hay, we always consider it as a laxative food, and, until I met with it in practice I never thought of it producing a very aggravating form of impaction. But after meeting with several cases of impaction where the horse was being fed on alfalfa hay I begun to take notice.

There are two forms that I have met with. One is wherein impaction is caused by a very firm ball of improperly masticated alfalfa hay lodged usually in the floating colon. In this form it seems to me the primary cause is defective teeth as I have always met with it either in aged horses or in young ones of three or four years, when as we all know their molars are defective, due to the shedding of the temporary teeth.

The other form is wherein there is an enormous quantity of food in the large colon. In this form there always seemed to be an excessive tenaciousness to the contents of the bowel and while being semi-solid and well masticated it adhered together to such an extent that it was extremely difficult to get an evacuation of the bowel.

The symptoms are the same as in impaction from other causes. Either form may be associated with tympanites, and if so, the rolling, rapid breathing and other signs of pain are much more violent. Where there is no tympanites the horse will show stupidness, may either lie down or stand up, but usually alternates between lying and standing at long intervals, occasionally kicking at its abdomen or looking around at its side. Upon rectal examination (and, by the way, this is what I rely upon to give me the exact nature of most disorders of the bowels), one will

* Read at the annual meeting, Missouri Valley Veterinary Association, Omaha, July, 1910.

find either the hard ball in the floating colon or the semi-solid mass in the large colon. These symptoms associated with the history that the horse has been fed on alfalfa hay and the fact that the horse is of an age when defective teeth are common are sufficient to make a diagnosis.

Treatment consists of the judicious use of the numerous cathartics which we have at hand. Personally I have had better results from arecolin or oleum lini than from aloes. These are the only three I have used. In addition to the use of cathartics I usually use strichnine as a bowel stimulant or tonic. It is also advisable in the form wherein the hard ball has formed, to remove it with the hands as soon as it can be reached per rectum.

COMMITTEES APPOINTED BY PRESIDENT GLOVER, A.V.M.A.

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REPORTS OF CASES.

A. V. M. A. CLINIC—OPERATIONS AND RESULTS.

Our readers were promised a full account of the operations performed at the A. V. M. A. clinic with results, in this issue of the REVIEW. We cannot report on all the cases with results, as many of them have not progressed sufficiently far to make the results of interest at this time; but we will give a report on nearly all of them *with results;* results on cases 1, 2, 3, 4, 6, 28 and 29 not having yet been reported.

5. Collie bitch, age 4 months: Oophorectomy. Anesthetic—Morphine, 1 gr., and atropine, 1/8 gr. Operated upon by Dr. R. T. Whittlesey, of Los Angeles. The operation was performed without inserting finger into the abdominal cavity. A continuous suture tied in a bow knot was used. Dr. Whittlesey advised loosening the bow knot to meet the swelling in twenty-four hours, and on the third day the cutting off of the knot and allowing the dog to remove the stitches later. Anæsthesia was complete. This case made a splendid recovery.

7. Bay gelding: Thecal abscess, caused by penetrating street nail, which opened the navicular bursa. The animal was restrained by being put on an operating table perfected and invented by Dr. J. F. Ast, of San Francisco, Cal. Local anæsthesia was obtained by injecting 3 grains of hydrochloride of quinine and urea over the plantar nerves. Anæsthesia was pronounced satisfactory. The operation was performed by Dr. L. A. Merillat, of Chicago, Ill., doing a resection of the perforans tendon. Tincture of iodine dressing was applied. This horse was also afflicted with canker on all four feet. Result: Latest report is that this case is doing nicely.

8. Black stallion, age 2½ years: Double Cryptorchid, both testicles being in the abdominal cavity. The animal was cast by Dr. George White, of Nashville, Tenn., the Knowles casting harness being used. Chloroform anæsthesia by rapid method. Anæsthesia complete in 5 minutes. Operated upon by Dr. David F. Fox, of Sacramento, Cal. Result: A splendid recovery.

9. Pointer dog: Tumor following a wound of two years' standing in left patellar region, weighing 7½ ounces. Anæsthetic: Three tablets H. M. C. Compound administered one and one-half hours previous to operation. Pupils dilated to fullest extent. Very nervous, and it was necessary to administer ether to complete anæsthesia. Operated upon by Dr. J. T. Seely, of Seattle, Washington, assisted by Dr. Francis Abele, of Massachusetts. Tumor was removed with the ecraseur. Result: Recovery.

10. Bay gelding: Volar Flexion of left front leg. Animal cast by Dr. C. W. Fisher, of San Mateo, Cal., with the "Spencer Casting Harness." Anæsthesia: Three grains quinine and urea injected over seat of operation. Tenotomy of perforans tendon was performed by Dr. L. A. Merillet, of Chicago, Ill., who directed that the heels be lowered and the toe raised by high calks. Following the operation a bichloride pack was applied to the leg. Result: The latest report is to the effect that the animal is doing nicely.

11. Brown stallion, age 3 years: Exhibited as a cryptorchid. Dr. C. B. Outhier, of Salinas, Cal., attempted to demonstrate the flank operation; the method similar to that of spraying heifers. An incision was made in the left flank, but no testicles were found, and it was decided that castration had previously been performed. Result: Recovery.

12. Black and white bitch, age 3 years: Oophorectomy was performed by Dr. A. W. Boucher, of Pasadena. Torsion method used to remove ovaries. Ether anæsthesia was used. Result: Uneventful recovery.

13. Bay mare: Poll-evil of long standing. Placed upon operating table and chloroform was administered by Dr. J. A. Hill, of Alameda, Cal. The "Williams operation" was performed by Dr. L. A. Merillat, of Chicago, Ill., and the thermo cautery used. Result: Up to date the case shows little improvement.

14. Setter bitch, age 7 years: Tumor of mammary gland. Anæsthetic: Morphine, 2 grs.; atrophine, ⅛ gr. administered one hour and a half previous to the operation. Anæsthesia complete. Operated upon by Dr. David F. Fox, of Sacramento, Cal. Result: Recovery.

15. Brown gelding, age 3 years: Fibrous tumor, size of an apple in umbilical region. Animal was cast by Dr. Frank Griffith, of Hanford, Cal. This animal was very refractory, but

was cast with neatness and dispatch by western plains methods. Dr. Griffith was the recipient of great applause for his dexterity in securing this animal. Operation was performed by Dr. J. T. Seely, of Seattle, Wash. Result: Recovery.

16. Fox terrier, age 28 months: Autopsy was performed on this dog by Dr. A. V. Hall, of San Francisco, Cal., to demonstrate the result of an operation anastomosing the deodenum by end-to-end method and large and small intestines united by double blind end side by side anastomosis. The result showed the operations to be successful in every respect.

17. Dalmation bitch, age 9 years: This dog was autopsied by Dr. A. V. Hall, of San Francisco, Cal., to show the results of an operation performed by him twenty-six days previous when a sponge was removed from the stomach, and closure was obtained by the mattress stitch method. The results were perfect and dog was in splendid condition.

18. Bay gelding draft horse: Interfering sore three inches in diameter on each hind fetlock. Examined by Dr. C. L. Roadhouse, of Berkeley, Cal., who decided that the condition was not Bursatee, as was suspected by the local veterinarian who sent the case to the clinic. Tincture of iodine, 1 part, and tincture of ferric chloride, 3 parts, was recommended as a dressing.

19. Black gelding: Bursatee on left side of face and right fetlock and ankle. This animal showed a similar condition in previous years. It was sent to the California Experiment Station by Dr. David F. Fox, of Sacramento. Dr. C. L. Roadhouse, of Berkeley, examined the case and stated that no treatment had been used, but that the wounds were healing rapidly, due to the change to a cooler climate.

20, 21, 22. Three cows were exhibited by Dr. George S. Baker, of San Francisco, which had recently reacted to the Intradermal tuberculin test. The swelling of the caudal fold at the point of the injection was very pronounced in one case, and plainly visible in the other two. The injection had been made forty-eight hours previously in the left sub-caudal fold. An autopsy was performed on cow 22 by Dr. George S. Baker, of San Francisco, Cal. The case proving one of generalized tuberculosis.

23. Cow: Oophorectomy performed through the vagina by Dr. C. J. Schultz, of Seattle, Wash. Result: Recovery.

24. Cow: Oophorectomy performed through the left flank by Dr. O. A. Longley, of Fresno, Cal. This operation was per-

formed by cutting through the skin, then dividing by traction the muscle fibres, thus avoiding non-closure and hemorrhage. The skin only was sutured with three interrupted sutures. Operation consumed less than three minutes. Result: Recovery.

25. Black mare: Chronic Oestrum and Metritis. Oophorectomy was attempted by Dr. F. H. McNair, of Berkeley, Cal., in the standing position. Result: Shortly after the operation the animal suffered intense pain, dying in forty-eight hours. Autopsy revealed the following conditions. Abdominal cavity in the lumbar region contained from two to three quarts of encysted coagulated blood due to a ruptured blood vessel, peritonitis and metritis; the uterus being injected and containing a quantity of thin pus. Laceration of the peritoneal covering of the rectum. Both ovaries intact. Lumbar group of lymphatics absent.

26. Black stallion: Castration. Testicles were found in the lower part of the inguinal ring. Animal was cast by Dr. George White, of Nashville, Tenn., by the "Miles colt casting method." Operation was performed by Dr. J. A. Blattenberg, of Lima, Ohio. Result: Recovery.

27. Bay gelding, aged: Volar flexion of off front leg. Anæsthesia by the injection of 2 drachms of a 2 per cent. solution of cocaine. Operation was performed in standing position by Dr. J. H. Blattenberg, of Lima, Ohio, who divided the perforans tendon. The animal walked much better after the operation. Result: Late reports indicate that the animal would make a nice recovery.

30. Black Percheron stallion, age 7 years: Diagnosis—Botryomcosis of scrotum and testicles. The enlargement was fully 12 inches in diameter. Several fistulous tracts were discovered leading deep into the scrotum. This animal had been used in the stud until the last month or two, when the scrotum became so swollen that he was removed to the hospital for treatment. Antogenous vaccines and various treatments were used with no result. The animal was cast by Dr. Frank Griffith, of Hanford, Cal., and chloroform was administered by Dr. J. A. Hill, of Alameda, Cal. Castration and removal of the diseased tissue performed by Dr. J. H. Blattenberg, of Lima, Ohio. Result: For several days after the operation horse showed marked depression, refusing to eat. At the end of a week this horse commenced to pick up and gain his normal condition. On or about the tenth day he was led into a corral for his daily exercise. He showed great spirits, evincing a desire to play. Had been eating well.

While being exercised he suddenly dropped to the ground, dying in a short time. Autopsy revealed no reason for death, other than the presence of an anti-mortem clot in the heart. No peritonitis present. Operation wound seemed to be healing nicely. Animal for several days before death gave a normal pulse and temperature, and was apparently doing nicely in every respect.

Feeling certain that the following extract from a letter under date of October 14, 1910, from Dr. Wm. F. Egan, San Francisco (at whose hospital the clinic was held), to Dr. R. A. Archibald, Oakland, Cal., will prove of interest in connection with the above case, we reproduce it.

" I am glad that the location of the clinic was satisfactory, but I was sorry that the big stallion died.

" I do not know if you are aware of the facts concerning him. The horse, as I understand it, had very little exercise previous to being sent to the city; when he arrived, the streets were blockaded by the parade. The man had to take the horse around by Sixteenth and Valencia to avoid the parade, and I believe he crossed Market street somewhere near the Veterinary College, and had to climb hills and go by a circuitous route to reach the clinic.

" The stallion arrived, somewhat exhausted, at the noon hour, and soon after lunch was cast and operated on. The operation proved to be a very tedious one and occupied all the evening, until dark. In fact, they had to use a light in order to complete it. He struggled continuously, not having received an anæsthetic, and when he got on his feet was weak and almost pulseless. The pulse, as near as we could count them, were over 100 to the minute. We gave him a dose of aromatic spirits of ammonia, and fl. ext. of nux vomica; blanketed him, and put him in a comfortable stall, without food, for the night. In the morning he refused food of any kind, but took a few swallows of warm oatmeal water. He again received the ammonia and strychnine stimulant, and as his pulse could scarcely be felt, got a hypodermic of adrenalin chloride, which improved matters. For about three days he took no solid food, but took some warm oatmeal drinks with some ammonium chloride dissolved in them. After a couple of days his pulse improved, until I could count them at 80. They were, however, intermitting, and his jugular stood out distended, and showed jugular pulsations. A day or two before he died I told the man to walk him a little in the yard, to assist absorption of swellings of scrotum and sheath. The man

reported that slight exertion caused by leading him this way distressed him very much. I therefore told him to discontinue walking him. The walk was only in the yard, and very slow. I told the man the next day to let the horse out of the box stall into the long runway in the back stable. He rang me up on the 'phone and reported that when the horse walked of his own accord he appeared weak and staggered and fell. He gave him stimulant as above, and the horse got up, appeared better, and started to eat. After an hour or so the horse became distressed in breath again, staggered and fell. He again gave a stimulant, which improved him temporarily, but he soon died. On the morning of his death he appeared bright, but had the jugular pulsation, and weak, rapid, intermitting pulse. Post mortem showed white fibrous clots, extending a foot or more into the blood vessels. Had the horse been prepared, or the operation less prolonged, I think that he would have come out all right."

Exhibit of Pathological Specimens.

Preserved Specimens.

The members of the American Veterinary Medical Association that were in attendance at the San Francisco meeting are very much indebted to Dr. C. M. Haring, of the Experimental Station of the University of California, and Dr. Geo. S. Baker, Inspector in charge, B. A. I. at San Francisco, for the following exhibition of pathological specimens in connection with the clinic:

Carcinoma of left kidney—ewe.
Caseous lymphadenitis sternum—ewe.
Goiter from ewe.
Abscess in brain—wether.
Common pin embedded in right external lobe of liver—hog.
Kidneys showing inflamed areas—hog.
Melanotic tumor, abdomen of hog.
Skin showing healed lesions of hog cholera.
Nodular disease (oesophagustome) columbiarum—steer.
Wool ball from ewe.
Hermaphrodite—hog. (This specimen showed complete testicles, bladder, spermatic cord, penis, ovaries, fallopian tubes, uterus with perfectly developed cornu and vagina. The vulva was absent. Urine was discharged through the penis; the animal having the external appearance of the male.)
"Mule-foot"—front feet—hog.

Skin, Scabies—hog.
Actinomycosis of tongue—steer.
Nephritis of kidney—calf.
Small inflamed areas of kidneys—hog.
Tuberculous spleen of hog.
Tuberculous lungs of hog.
Tuberculous lymphatic glands of hog.
Tuberculous kidneys of hog.
Tuberculous liver of hog.
Tuberculous mammary glands of hog.
Tuberculous arthritis fore-leg of hog.
Tuberculous lungs of cow.
Tuberculous diaphragm of cow.
Tuberculous omentum of cow.
Tuberculous spleen of steer.
Tuberculous lymphatic glands of steer.
Tuberculous kidneys of steer.

Frozen Specimens Not Otherwise Preserved.

Numerous specimens showing a great variety of lesions of tuberculosis of hogs and cattle.

Seven sheep heads showing lesions of lip and leg disease due to the bacillus of necrosis.

There were numerous other frozen specimens, a list of which is not obtainable.

VERMINOUS EMBOLISM OF CECAL ARTERIES.*

By J. L. BUCHANAN, Auburn, N. Y.

CASE NO. 1.—Patient, a mare 18 years old, owned by a grain dealer and used irregularly for delivering. Condition was excellent. January 17th I was called to see this animal, and found a well developed case of lymphangitis combined with severe colic. Left hind leg very much swollen and painful. Linguinal lymph glands swollen and hot. Made a rectal exploration and found everything normal. Peristalsis was very active, and soft feces were passed in small amount. Pressure on right abdominal wall caused pain and flinching.

* Reported at twenty-first annual meeting, N. Y. S. V. M. S., Ithaca, Aug., 1910.

Treatment.—Two grs. of arecolin were given, and a considerable amount of soft feces were passed. Two dr. doses of pot. iod. were given night and morning, and the affected leg irrigated with cold water. Two days later the animal was apparently normal.

March 12th, a. m., I was called to see this animal again, and was told she had not been doing well since the previous attack of lymphangitis. Her appetite was poor, sometimes refusing food entirely. When worked she scoured, showing mild colic later.

Evidently she had been suffering from pain a large part of the night, as she was well marked up. She would lie down and get up; kick at her abdomen with right hind foot, and look around at the right flank. No feces had been passed during night. Peristalsis was active on the left side, but very quiet on the right. Made a rectal exploration. Negative. Pulse and temperature normal. I knew this animal was given unlimited quantities of feed, and concluded it was a case for elimination. Gave 1½ grammes of arecolin and followed with a tonic. She appeared to be all right the next day, but was left in the stable ten days. On March 22d was used in the p. m. delivering, and soon commenced to scour. The following morning, March 23d, she was found with the usual colic, except more severe. Peristalsis very active. Gave 1 ounce of chloral hydrate and followed with ½ ounce doses of tinct. of opii. Prompt recovery. This time I suggested to the owner that we had a case of thrombus, or embolism.

Five days later, March 28th, was called again, and found the same set of symptoms. Gave same treatment as before, but she did not respond. Pulse and temperature normal, and remained in this condition until following p. m., when I got a hurry call saying animal was much worse. This time it was a different looking animal. Rapid shallow breathing. Pulse 98 and weak, temperature 105½°. Conjunctiva deeply injected. Nostrils dilated. Patchy perspiration, and every look about the animal one of extreme agony. Treatment was useless, and owner being away, we decided to let the disease kill her, instead of shooting, which would have been the humane thing to do. Death followed six hours later.

Post Mortem.—Cecum black and gangrenous and thickened. A thick coagulated exudate upon the mucosa varying in color from dark purple to a yellowish red. Two thrombi were found

in posterior aorta, and one in anterior mesenteric artery. The cecal arteries were followed up, and about five inches from their origin an embolus was found in each.

CASE No. 2.—I was called to post mortem this animal, but had seen it before, and knew its history. A four-year-old brought from the west in the spring, thin and run down. Later, it was turned out to grass. A few weeks afterward owner was notified that his horse was sick and scouring badly. The horse was brought to the stable and nursed for several weeks, requiring help to get up. It was traded off, and drifted from one swapper to another, and ultimately was landed on a farmer who lived eighteen miles from town. The horse was taken with colic before he reached home, and died in a short time.

The following day I was called to post mortem, the farmer thinking he might have a rebate coming from the swappers. I found a ruptured cecum, black, gangrenous, and the same dark purple exudate on mucosa; a thrombus in right branch of anterior mesenteric artery, and what appeared to be a recent embolus in the superior cecal artery. In the embolus were found strongyli about one-half inch long, and the mature worm in great numbers were found in the colon and cecum.

CASE No. 3.—A light delivery horse well along in years. Horse commenced to show colic at 4 p. m., and was driven until nearly six under the whip, hoping to drive out the colic. About 6 p. m. he was put in the stable, and broke away, ran into the street, and, as they said, acted like a crazy horse. At 7 p. m. I was called, and found the horse in great distress, covered with perspiration, and throwing himself about the stall. Pulse very rapid and weak. Respiration shallow and rapid. Conjunctiva deeply injected. Temperature, 104°. Considerable tympany and much straining. Used the trocar, and it seemed to give some relief. Considerable fluid, serum like, mixed with blood, escaped through the tube. I thought this was a case of twist, and attempted to make a rectal exploration. Found the pelvic cavity full of viscera, and manipulation caused such severe straining and pain I gave it up. The animal became quiet, and died thirty minutes later.

Post Mortem.—Ruptured cecum, black and gangrenous; the same thick coagulated exudate on mucosa, with some free exudate in the cecum. Thrombi in posterior aorta and anterior mesenteric artery, with embolism of both cecal arteries. Strongyli were found in the anterior mesenteric, and in the colon and cecum.

CASE No. 4 was a repetition of above. The most striking thing in the post mortem of these cases is the thick dark hemorrhagic exudate on the mucosa. In three of these cases the strongylus was found in the arteries, and examined with a hand lens. In all four cases the mature parasite was found in the colon and cecum.

Reeks, in his book, "The Common Colics of the Horse," devotes a chapter to enteritis, and describes perfectly the symptoms and lesions of these cases of acute embolism. As causes, he advances twist and embolism, but holds the belief that they are due to a septic infection of the blood stream. But why should this infection localize in the cecum and colon?

There are two good reasons why embolism of the colic and cecal arteries is more frequent than of the other visceral arteries.

First, the cecum and colon are the natural home of the parasite which bores into their blood vessels.

Second, the right branch of the anterior mesenteric artery is the largest. Hence, any debris gaining entrance to the mesenteric artery would naturally follow the largest blood stream into the right branch, which gives off the colic and cecal arteries.

The length of the right branch varies from one-half to two inches. The origin of the right colic and cecal arteries varies also. Sometimes the three arteries are given off at the same point by the breaking up of the parent trunk. In this case the right colic artery would carry the greatest volume of blood. Again, the right colic artery may spring from the middle portion of the right branch which continues onward, holding its size until it breaks up into the cecal arteries. In this case we have the combined volume of the two cecals to offset that of the right colic. This is the distribution I found in my post mortems.

NOTES AND OBSERVATIONS ON RABIES.

By DR. M. J. JONES, SR., Veterinarian, Blanchester, O.

At eight o'clock a. m., October 10, 1910, I was called by 'phone to one, William Snyder, three miles from my office; arrived in about one hour, was shown a gray gelding weighing about 1,050 pounds, said to be twelve years old.

He was in a box stall with a low manger in front of him. I was told this horse was apparently well until the morning of the

9th, when he seemed to be very nervous and excitable, seeming to want to defecate and urinate frequently. He was continuously rubbing his left nostril over the false nostril, and looking very much excited. During the day of the 9th he was running in a pasture with several other horses; the owner noticed during the day he would be quiet for quite a while, then suddenly he would be aroused and run frantically to some object and rub his nostril and would keep running from place to place until the nervous spell passed off, which would be in a few minutes. He continued to act this way during the night of the 9th. Next morning he seemed much worse, being more nervous and excitable; was taken out of pasture and placed in a box stall with low manger in front; at this time I was called and arrived in the course of an hour.

The owner stated that twenty-one days prior to the first time they noticed anything wrong with this horse, he was placed in his stall for the night; on the owner going to the stable in the morning, he found a stray dog lying on the hay in front of this horse; the dog looked very tired and haggard. On arousing him he slunk out in the yard, where the house dog attacked him. He paid very little attention to him, turning and snapping at him three or four times and finally got away. The owner noticed nothing wrong with the horse excepting a slight tumefaction over the left nostril, which had a scratch on the surface; this seemed to disappear in a few days.

Observation and Symptoms.—First saw this horse standing quietly in box stall with eyes partly closed and looking very much exhausted; respiration accelerated; on being aroused by our presence, he came suddenly forward to the manger, rubbing his left nostril frantically against it. The muscles about the mouth were drawn back over his teeth and he gasped as if he was dying. He grabbed the muscles of his breast, straddled out his hind parts as if trying to urinate, and groaned fearfully. His tail stood erect, all the abdominal muscles seemed greatly contracted; he crouched lower and lower until he lost his balance and fell, still holding on firmly to the skin of his sternum. After a few fearful struggles he regained the standing posture; he stood in the corner quietly, very much exhausted. After a few minutes, on again being aroused, the muscles around the mouth became contracted and he yawned as if he was dying. He then grabbed the skin of the forearm, straddled out the hind parts, drew his yard, which became erect, and with tail elevated, he crouched lower and lower until he fell. After a few desperate struggles he again stood on

his feet and stood quiet, breathing very hard. These paroxysms were repeated at intervals of five or ten minutes, each one becoming more aggravated until in the course of two hours paralysis of posteror extremities set in, and he could not get on his feet; but still continued to hold fast to the skin of the forearm and breast with his teeth. After he was down there seemed to be but very little intermission of the paroxysm. He continually retained his hold of some part of breast or arm. I diagnosed rabies and had the horse immediately destroyed; also the house dog which had not shown any signs of rabies.

There is one symptom I wish to mention particularly, that is not generally mentioned by writers on this subject; that is the excitable state of the genital organs, which was very marked in this case, and many others I have seen, the mare showing every symptom of oestrum, and in the perfect horse and gelding, erection of the penis with every preparation for copulation.

POISONING BY ERGOT.

By D. D. KEELER, V.S., Salem, Ore.

I promised myself that I would try and report a case or two of what we, the farmers and stockmen, are pleased to call "Staggers," though in reality I believe is poison by ergot. found in this the Willemette Valley in oat-hay or straw, darnell grass and buckwheat and stored in the system until such times as the system may by being overtaxed, or weakened, and thus brought into the proper condition for it when it attacks the muscles and weakens them so the horse staggers.

I have not found in any of the books or any report of cases the semiology of these cases of which many are seen in this valley every year, and many die. On August 23d I was called by Mr. Measor to come to his place in the Red Hills, south of town, to see a horse affected in some way so he could hardly get him through the stable door without his hitting both sides, although the door was of usual size. I had my suspicions what was the matter, for I asked him over the phone what kind of hay are you feeding and he said oat-hay of the finest kind. I immediately prepared to go, and on the road I met a neighbor of his and as he stopped he said, "Did my boy with the wood wagon show you a horse that did not seem quite well?" And I said "No." "Well," he said, "she could hardly get out of the barn

this morning, she seemed so stiff, but we have been working them pretty hard hauling wood and that may be the reason." I asked him the kind of hay he had been feeding, and he said fine oat-hay without a bit of fern in it. (I might say here that for many years and, in fact, until some experiments on feeding of fern was made, the old settlers attributed this disease to the fern in the hay, but such conclusions have been proven untrue.) I prescribed for this horse on the conclusion that it was ergotal poisoning and went on to Measor's; found a twelve-hundred-pound bay Clyde horse probably 8 years old, square built and in good flesh, heart's action 86, temperature 102.2°, appetite good, respiration about normal when quiet, but would blow some if moved much; gave treatment and ordered him fed on bran mash and green corn. No more oat-hay was to be given. For a day or two he could hardly get to the water, it being in a rather hard place for him to get; he had to go down a narrow ravine and would tilt from side to side. This horse seemed to be affected most in the heart.

In four or five days I was called to see the neighbor's horse. They had been working this animal for several days after they found something was the matter with her, which is very unfortunate for the horse so affected, but their appetites are good and so the owners are not aware of their serious condition; her heart's action 64; temperature 104.8°. If moved at all she would breathe very fast, if turned quickly, would tumble down. She had been fed oat-hay right along while giving her the medicine. This animal was affected most in the lungs and hind parts. As this disease goes on, they will be unable to stand or get up when down; the appetite is lost and they become clogged; spasm set in, they lay on the side and by continually pawing describe a circle, and in a few days die. There seems to be a swimming sensation, especially marked when they are on a plank floor; they are somewhat relieved from this when put on the ground. I have seen as high as twenty head of horses in a travel of one day affected with this trouble along the foothills of the Cascade range of mountains, and every one was being fed on oat-hay cut from little cleared patches along the level lands or ravines in these hills.

These kinds of feed do not affect unfavorably cattle or sheep, probably from the fact that they regurgitate their food and the ergot is not stored. The above horses spoken of made a fine recovery, the second one just being used a little at this date, September 16th.

PENETRATION OF THE ABDOMINAL CAVITY—RECOVERY.

By A. B. Ellis, D.V.S., Los Angeles, Cal.

A handsome black mare was presented at the hospital, with the history that she had ran away and jumped over a low iron fence. On being placed upon the operating table and examined preparatory to dressing the wounds, an extensive laceration was revealed just behind the last rib, about on a level with the spur vein on the left side. The hair was clipped from around the wound, the ragged edges trimmed off, and a probe inserted, which came in contact with a hard substance, which, on removal proved to be a piece of an iron picket about three inches long and curved on the end, which had broken off with the mare's weight after penetrating the abdominal cavity. None of the intestines were punctured, however, but all that kept them from coming out was a fold of the omentum lying over the lacerated muscles. After trimming off some of the omentum and examining the small intestines to see that none of them were injured, the peritoneum was pulled together and stitched with catgut.

A piece of cotton soaked in a weak solution of permanganate of potassium was then laid over the stitched surface, the muscles and skin drawn over it and allowed to remain for forty-eight hours to allow swelling to take place to close the perforation through the abdominal muscles. The patient was placed on a drachm each of extract of belladonna and fluid extract of nux vomica, three times a day. Her bowels not having moved on the second day, a physic ball was given and resulted in a free movement within the next twenty-four hours. During the two weeks that the mare has been under treatment since her entrance into the hospital, the wound has been dressed with a 1-1,000 solution of pyoktanin. There is no sign of hernia or other complication at this writing, and there is every reason to believe she will make a complete recovery and be in condition to discharge from the hospital in another week.

President Glover, of the A. V. M. A., is "on the job," and has been since the close of the San Francisco meeting; with the determination of making the 1911 meeting, *wherever* those who have the matter in charge elect to hold it *one to be remembered.* That determination and the spirit in which it is expressed *insures* the success that the doctor aims at.

ARMY VETERINARY DEPARTMENT.

THE VOTE FOR LEGISLATIVE FUNDS.

The news, telegraphed from San Francisco, that the American Veterinary Association had voted a contribution of $500 in support of the Army Veterinary Bill, now pending before Congress, has been received with genuine gratification by the army veterinarians, who are anxiously hoping for the enactment of the bill.

It is not only recognized that the fund is large enough to be helpful, but that by taking this step the association has proven to have passed the state of mere sympathy expressed in well-meaning resolutions as of former years, and that it has felt itself now strong enough and able to actually support by proper means those measures before Congress that happen to be of fundamental need for the life and development of parts or of the whole of the veterinary profession.

What now remains to be done is to strengthen the legislative committee of the association by the addition of representatives as well versed in their line of work as are, for instance, the members of the committee on diseases. It is not every man's gift, nor is it the average veterinarian's choice, to speak and argue with legislators. A ripe judgment, wide experience in life, tactful and skillful proceeding, patience yet push mingled with professional enthusiasm, are a few of the requirements and natural endowments to be possessed by those veterinarians who are to play the role of launching the hopes and desires of our profession into safe and effective channels of legislative procedure and enactment.

Although there has sprung up another measure before Congress that seems to have aroused the thoughts and resentment of our colleagues in civil and official life, and perhaps rightly so from the condition under which our profession is progressing at present, yet we sincerely hope that the small Army Veterinary Bill will not be lost sight of by our representatives of the legislative committee. Here is a bill, half passed, sanctioned by the

War Department, with little or no objection to legislators, but unpushed. There is nothing in this bill to arouse the pride, patriotism or personal interest of congressmen; it has no other motive than providing a little better for one of the hundreds of branches of our complicated governmental machine. So far we have been counseled not to antagonize the good will of congressmen by unduly pushing our bill, but to wait for their convenience of action. That this policy will bear no result has become quite clear, as also that nothing but the "offensive" will bring victory. We must urge, argue, even use force, if need be. We have been strengthened in this conclusion by the advise of a well-known legislator himself, who recently said: "There is no ghost of a show for your bill unless you can bring it out on the floor of the house at once, and then hang on to it with dog's teeth. The bill is important to you, but it is not so to congressmen."

Another difficulty to be encountered lies in the determination of the War Department to insist upon the enactment of the "Extra Officers' Bill," as the main bill needed. It is a costly measure, one not favored by many congressmen, and its argument will consume much time to the detriment of the several other military bills still pending. Our veterinary bill, therefore, will not be urged by the War Department, friendly as it stands towards it. The urging is left to ourselves, and we have been told so. Besides, there are several other smaller military bills, each one having their advocates, and they are all expected to be passed during the coming short session of Congress. All this is not particularly encouraging, neither is it entirely discouraging.

The time is fast approaching for our legislative committee to make plans for the campaign for our bill. We hope that the money so liberally voted will not be spent in useless entertainments to legislators, but to defray the legitimate expenses of the members of that committee and their helpmates. Let us have a clean cause. Publications, letters and stamps, telegrams, railroad fares constituted the expense list that in 1901 nearly gave us a complete Army Veterinary Corps. We hope and trust that similar tactics will enable our friends of the committee to be successful in their present efforts. The glory will all be theirs, and their names will be chronicled in the annals of American veterinary history among those who have stood in the front rank in a fight that was righteous, for progress and of lasting good.

O. S.

CORRESPONDENCE.

BUFFALO, N. Y., October 24, 1910.

Editors AMERICAN VETERINARY REVIEW:

On page 60, October REVIEW, Dr. Fred Foster, Camp Gregg, P. I., writes to know what is meant by "Mule-foot Hog." The following may help out.

Clipping from paper, Washington, D. C., some years ago says:

"National Zoo, Washington, D. C., Has Solid Hoofed Pig—Gift of Farmer from Indian Territory. So far as known there are only two such in United States east of Mississippi, second owned by farmer in Sequachee Valley, Tenn. Darwin has account of such pigs in his "Origin of Species," as there were three in England at the time he wrote this book. The solid-hoofed hog is not a freak, but a genuine case of reversion to a primative or ancestral type. Tracing back to the elotherium, from which all members of the swine family are descended, which animal had a solid hoof."

Dr. Frank Baker, Supt. of the National Zoo, Washington, D. C., would probably be able to furnish you considerable data on this subject.

Respectfully yours,

DR. FRANK A. CRANDALL,
Curator Zoo, Buffalo, N. Y.

SOUTH OMAHA, NEB., October 21, 1910.

Editors AMERICAN VETERINARY REVIEW:

Answering inquiry in regard to "mule-foot hog" in October REVIEW, "mule-foot hog" is a term used to signify that the hog has one or more of its cloven feet replaced by a solid foot.

Where there is less than four mule feet on a hog, the remaining foot or feet may show a variation from the normal foot by having an extra claw between the principal claws, or one of the principal claws may be much larger than the other, or there may

be a mule foot with two grooves running from the top of the anterior wall to the sole.

I am unable to state whether or not these variations show the evolution of the mule foot. The photograph shows a dissected mule foot. The hoof is shown separate.

Yours truly,

ANDREW ENGLISH, Vet. Inspector.

BLACKSBURG, VA., Oct. 14, 1910.

Editors AMERICAN VETERINARY REVIEW, New York City:

Replying to the inquiry of Dr. Foster of the Second Field Artillery, I will state that the "mule-foot" hog is one in which the hoof is not cleft. There are separate pedal bones enclosed in one hoof that, in some respects, resembles the hoof of a mule. These hogs are of a bacon, or probably more of a razor-back type, and were quite common in Oklahoma a number of years ago. They are being bred and advertised as immune to hog cholera, but competent authorities deny this statement. They do not pos-

sess qualities that would appeal to the average swine breeder, except that they are good rangers and have the peculiar conformation of the hoof already mentioned.

Yours truly,

N. S. MAYO,

Va. Agr. Exp. Sta., Department of Animal Husbandry.

EAU CLAIRE, WIS., Oct. 17, 1910.

Editors AMERICAN VETERINARY REVIEW, New York City:

Replying to the inquiry of Dr. Fred. Foster in the October REVIEW, for a definition of the term "mule-foot hog," we occasionally find in the course of inspection of hogs in a large packing house a hog in which the feet instead of being cleft as in normal feet, has the two digits united into one, so that the foot resembles that of a mule. Perhaps that is what the doctor refers to. I recall the finding of a heifer in which a similar condition appeared.

Respectfully,

WM. FOTHERINGTON,

Inspector, B. A. I.

BIBLIOGRAPHICAL ITEM.

337 E. FIFTY-SEVENTH STREET, NEW YORK, October 27, 1910.

To the Editors of the AMERICAN VETERINARY REVIEW:

I have just finished reading the book, "The Gait of the American Trotter and Pacer," an analysis of their gaits by a new method, written by Rudolf Jordan, Jr., and published by Wm. R. Jenkins Co., New York, which you sent me to review.

It was exceedingly interesting reading to me, putting forth many new mathematical problems, excellently illustrated, relating to the balancing and proper shoeing of the trotter and pacer. This work would be interesting and instructive to any reader. If the author's principles were more generally known and applied, much equine discomfort and pain, due to improper shoeing, would be obviated.

Yours truly,

HARRY D. GILL.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. Liautard, M. D., V. M.

Bagelli's Treatment of Tetanus by Hypodermic Injections of Carbolic Acid Solution [*Lieut. Col. J. Moore*].—This is the record of the treatment of four cases according to the directions of Bacelli, viz.: the injection every two hours for the first thirty-two hours, and less frequently afterwards of one drachm of pure acid in solution (5 to 10 per cent.). The first horse received a purgation first, and then the acid. After five days the animal grew worse and the treatment was changed for extract of belladonna. The animal began to improve at once and finally got well.

The second case was a mare. She also received a purgative in the shape of an alœtic ball and then Bacelli's treatment, which was kept up for five days. Chloral hydrate per rectum and bromide of potassium were also given. The mare recovered in twenty-six days. In a third and a fourth case the result was different. Both animals died and it was said that the fourth might have recovered had it not been for the carbolic acid treatment. Neither of these cases, however, ought to be considered as conclusive and further trials are to be carried out.—(*Veter. Journ.*)

An Inflammable Colic Draught [*William Beddard, M. R.C.V.S.*].—A mare has colic. A drench is prepared of ether nitr., oil tereb. and olium lini. As it is administered, the mare makes a plunge and falls with her mouth wide open on a lighted gas bracket. The contents of the mouth caught fire, and although the light was put out at once the mouth was badly burnt and the lower lip has since retracted to such an extent, owing to cicatrix, that it has become useless as an organ of prehension. The mare for eating has learned to use her teeth and upper lip.—(*Veter. Journ.*)

INTERESTING CASE OF RHEUMATISM WITH COMPLICATIONS. —[*Arthur Payne, F.R.C.V.S.*].—A four-year-old Great Dane has the tail badly bruised and ulcerated. One inch of it at the extremity is necrotic, and it has been bleeding copiously on and off for weeks. It was operated by the amputation of three inches of it being taken off. Informed that the dog had some difficulty in getting up and seeing him very lame on the left hind leg, with painful swelling on the front of the metatarus, rheumatic troubles were suspected and salicylic acid treatment prescribed. This was carried out for two days, when the dog was found dead the following morning. At the autopsy there were found two infractions in the spleen, a livid patch in the epicardium, at the apex of the heart and one also in the right auricle. Slightly attached and sprouting from the mitral valves was a pinkish granular mass. The endocardium was thickened and the lungs were almost hepatized, œdematous and of a bluish color.—(*Veter. Journ.*)

ABSCESS IN A CAT DUE TO B. PYOCYANEUS [*Prof. J. A. Gilruth, D.V.Sc.M.R.C.V.S.*].—Ten-year-old cat has a tumor as big as a cherry plum on the back of the neck. It has been opened twice, but gradually refilled. The entire tumor was completely removed. It was a purulent cyst, with dense fibrous walls. Cultures of the discharge gave growths of B. Pyocyaneous with a few colonies of stephylococcus aureus.—(*Ibidem.*)

LIPOMA IN AN AUSTRALIAN COCKATOO ASSOCIATED WITH ENLARGED LIVER [*Prof. J. A. Gilruth, D.V.Sc.M.R.C.V.S.*].—This Caccatua Rosiepilla has a growth situated subcutaneously under the abdomen, as large as a mandarine orange, soft, well defined and readily separated from the surrounding tissues. It was suspected of being malignant, and advice was given to have the bird destroyed. It was done. At post mortem, the viscera were found normal except the liver, which was large, pale, mottled with greyish areas and soft, friable and fatty. The tumor was also composed of fatty material. After all, the case might have been successfully operated barring the usual risks that attend operation on birds.—(*Veter. Journ.*)

VENTRAL HERNIA [*J. H. Parker, M.R.C.V.S.*].—Cart mare is found with a swelling in the right flank. It is a hernia the size of a small foot ball. Cast and chloroformed, an incision is made and the bowel exposed. Gentle pressure fails in keeping it

in the abdomen and it comes out as fast as it is pushed in. With a great deal of difficulty it is, however, pushed back with the fist of one hand, although the mass that protruded would have filled an ordinary stable bucket. The abdominal wound was then closed with ten interrupted silk sutures and that of the skin with six more, when the mare was allowed to rise. The operation was performed without any antiseptic preparations. The animal was placed in an open shed with her hind quarters elevated. She was not allowed to lay down. The temperature rose but one day up to 102°. There was considerable swelling at the seat of the operation, and the mare got well without any complication.—(*Veter. Record.*)

NOTES ON CLINICAL CASES HYGROMA—BIER'S TREATMENT [*Prof. O'Connor*].—Five-year-old gelding has for twelve months had a swelling round the knee, which has been growing. It had the consistency of a chronic bursal enlargement, with thick walls. It is fluctuating and situated below the knee at the postero-internal aspect of the limb. Painless to the touch, it did not cause lameness, although it is as big as a hen's egg. Pressure upon it did not cause distension on the outer aspect of the part, but above and behind the knee. It was diagnosed as a case of hygroma or subcutaneous cystic collection or perhaps a distension of the carpal sheath. Considering the various treatments that might be resorted to, the professor preferred opening, evacuating and injecting tincture of iodine as the one likely to have the best results. This was done under local anæsthesia and blood tinged serum allowed to escape. The cavity being then explored, it was found running three inches above the lower end of the radius, with its lining infiltrated with calcareous material. Iodine was injected, but failed to bring a complete cicatrization. Sulphate of zinc in powder was used with no better result. Finally hyperhæmic treatment was tried. A rubber tourniquet was applied above the knee and left on three hours. This was repeated for two days in succession. Great inflammation and swelling followed. The bandage was left off and when after a few days the swelling had somewhat subsided, it was found that the cavity of the cyst was smaller, was closing and the discharge reduced. The treatment was followed more or less regularly afterwards by the owner; but the cavity closed entirely, and although there was considerable thickening remaining, the animal traveled sound.—(*Veter. Record.*)

CYST IN SINUSES OF A COLT [*Same Author*].—Strong yearling colt, six months old, had a discharge from the nose. Now it has become copious, mucoid from the right nostril. Respiration is very loud. There is a large swelling over the frontal and superior maxillary sinuses and a thin walled cyst is felt in the right nasal cavity. Dullness over the sinuses by percussion. Being cast, on the examination of the nose, the cyst is bursted and reddish glairy fluid escapes. The frontal and superior maxillary sinuses are trephined with three large openings, similar fluid as that of the nasal cyst fills the sinuses and escapes. Antiseptic irrigations are prescribed, but after a fortnight there is no improvement except in the breathing, which is no longer loud. Cast again, the openings of the sinuses are made larger and from the cavity are removed with a curette soft spongy bone tissue with empryonic fibrous structure. Tincture of iodine and iodoform and boric acid are used, and after four weeks, having brought the case under control, the openings of the sinuses are allowed to close gradually and the animal is sent home, where recovery is completed. Eight months later the animal presented again the same symptoms. A similar operation was performed, and in addition an opening was made in the nose from the lowest part of the frontal sinus. The horse died the second day after the operation, with an attack of colics. Post mortem was disappointing as only a small chronic abscess of the stomach was found.—(*Veter. Record.*)

TUBERCULOSIS IN A SCOTCH TERRIER [*Prof. Craig*].—Since a fortnight this dog's abdomen has grown bigger. His condition is poor and his belly touches almost the ground. The digestive apparatus is normal. Heart seems muffled at auscultation. Palpation reveals no fluid indication of ascitis. On manipulation a well defined swelling is made out in the anterior portion of the abdominal floor. Laparatomy is performed. When the abdomen is open a large dark swelling presents itself; it is as big as a man's head. It is attached to the lower part of the diaphragm and in connection with the liver. The swelling is an abscess containing clear reddish colored fluid. The liver is the seat of numerous large tubercles. It is a case of tuberculosis and the dog is chloroformed to death. The big abscess had developed in the posterior face of the liver. There were found smaller ones on the hepatic surface and numerous miliary ones on its thickness. The hepatic and mesenteric glands were enlarged

and caseous. There were some tubercles in the omentum, stomach, intestines, and posterior face of the diaphragm. One on the kidney. The thorax showed tuberculous pleurisy, the lungs were filled with miliary tubercles, and the thoracic lymphatic glands were also diseased. Tubercle bacilli were found in abundance in the lesions.—(*Veter. Record.*)

FRENCH REVIEW.

By Prof. A. Liautard, M. D., V. M.

Intra-Thoracic Oesophageal Jabot in a Cow [*Mr. Robin, Sen. Student*].—Similar cases are very rare in bovines, if they are frequent in horses.

A Dutch cow, some fifteen or twenty days previous, presented symptoms of indigestion with formation of gases, which subsided with the administration of drenches, and since, after each meal, she vomits all that she swallows. All kinds of treatment seems useless. She is brought to the veterinary school clinic. There it is observed that rumination is all gone, there is no return of gases by the œsophagus, no eructuations, but a slight intermittent tympanitis. Constipation is marked. When food is presented to her, she takes it, chews it and after two or three swallows, mastication stops, the animal stretches her head on the neck, and two or three balls of food are rejected covered with saliva. Ingestion of liquids is also impossible. Oesophageal obstruction is diagnosed and confirmed by catheterism, a very small probang cannot pass through. Tuberculin is injected to find out if perhaps there is not pressure of the œsophagus by enlarged tuberculous mediastinæ or bronchial glands, but the animal dies during the night before the first temperature could be taken. At the post mortem the digestive canal and two last compartments of the stomach were empty, the rumen and reticulum only contained some hard food having offensive odor. There is limited adhesive peritonitis on the diaphragm and the œsophagus is normal in its abdominal portion. But in the thoracic, just as it is about passing through the diaphragm, it is the seat of a baggy dilatation, some 20 centimeters long formed by the thin mucous membrane protruding through the ruptured muscular coat. The sac contained about two pounds of food,

finely divided, forming a compact hard mass undergoing putrid fermentation.—(*Rev. Veter.*)

False Luxation of the Jaw in a Dog [*Mr. Bosselut, Sen. Student*]—An eighteen-months dog keeps its mouth open and it cannot be closed. The dog was found in that condition in the morning when taken out of the kennel. He is lively, caressing and tries to eat. There is no fear of rabies; at any rate if attempts are made to bring the jaws together, it is found impossible to do it. The opening of the jaws is solid and due to mechanical cause. The lower jaw is deviated on one side, but both incisive arches seem to be well opposite each other. The right masseter is a little harder and a little more projecting than the other. Diagnosis is made of luxation of the tempor-maxillary articulation. The ordinary method of reducing the same fails to return the bones in their position. The dog is put under the influence of chloroform and even then repeated efforts to close the mouth fail entirely. Anæsthesia is kept up and by request of the owner the dog is put to sleep to death. The head is examined and dissected. The muscles being removed, it is found that there was no luxation. The articular surfaces are in contact, but on the right side the coronoid process, instead of resting in the temporal fossa against the internal face of the zygomatic arch, has been pushed outwards and is held fast against the external. The muscular insertions on the process have been torn off. Practitioners will do well to bear this possible displacement of the coronoid process which, had it been suspected in this case, might have been relieved and the dog's life saved.—(*Rev. Veter.*)

A Cerebral Tumor [*Mr. A. Picard, Army Veterinarian*].—A mare shows very severe cerebral troubles. She pushes against the walls of her box, has violent attacks during which she rushes on surrounding objects. She dies after twenty-four hours. Diagnosis had been made of acute meningo-encephalitis. At post mortem all the nervous centers are examined. The meninges are very congested and here and there the seat of thicknings. The left hemisphere appears more congested than the right. Opening of the right ventricle gives escape to quite an abundant flow of citrine yellow liquid. In the left ventricle, there is a fibrinous yellow mass, very vascular on its surface, pressing against the walls of the ventricle and adherent to the

choroid sheath which forms for it a kind of peduncle. The tissue of that growth is rather hard, it is reddish in color. Examined as to its histological structure proves it to be a myxo-sarcoma which had taken its origin in the dura-mater.—(*Rev. Gene. de Med. Vet.*)

GENERALIZED INTESTINAL SARCOMA WITH RETROGRADE MESENTERIC ADENOPATHY AND PERITONEAL METASTASIS [*Dr. Antonio Maja*].—A dog was suspected of having tuberculosis. Tested, he gives no reaction. He was in very bad condition, ate poorly and gave signs of gastro-enteritis, which was treated successfully. His condition continues to be bad and his owner gives him up. He dies shortly after.

Post Mortem: Abdomen—No exudate to speak of. On a level with the paracœcal glands there is a growth as big as the fist, in the thickness of the mesentery and to which the omentum is attached. It is hard, whitish and homogeneous. Starting from it, a large number of similar small tumors are observed along the mesenteric blood vessels. There are miliary ones on the omentum. The congested liver is full of centers of generalization. There are two or three in the kidneys. In the Thorax: No exudate, sus-sternal glands are involved in the neoplam and also the trachœ-bronchial glands. The thyroid gland is the seat of an hemorrhagic tumor partly bony. The tumors were typical lympho-sarcoma and that of the thyroid an osteo-epithelioma.—(*Ibidem.*)

OBSTRUCTION OF THE LARGE COLON BY AN AEGAGROPILE [*Prof. Doctor Fontaine, Army Veterinarian*].—An eight-year Anglo-Normand horse, a brilliant animal, refuses his food, stretches himself behind and make expulsive efforts. Placed in observation he is soon taken with colic. First dull and slight. No passage from the bowels. Rectum is empty, bladder also. There is no excessive fullness of the pelvic arch of the large colon. Repeated oily purgatives, arecoline, large intestinal irrigations, removal of few hard fœcal matters from the rectum, all seem useless, and this condition lasts for five days. When on the sixth a small ball of manure is expelled and followed by purgation which is abundant. The colic disappeared and the animal looks for food. Six days later he gets uneasy, has colic again by spells, lays down carefully puts himself on his back and then assumes the dog's sitting position to finally get up. He

is always making strong expulsive strains. Intestinal congestion is threatening. Notwithtanding treatment, the animal dies after eighteen days of sickness.

Post Mortem.—It showed hypervascularization of the intestines, specially the large colon; stomach and small intestine are empty, the large contains some liquid and in softened excreta an ægagropile weighing two kilogs, muriform and made of felted alimentary substances with calcareous deposits in its center.—(*Rev. Gen. de Med. Veter.*)

PATHOLOGICAL ADHESIONS OF THE PELVIC ARCH OF THE LARGE COLON WITH THE BLADDER—NEPHRITIS—ENORMOUS RENAL CALCULI [*Same Author*].—This thoroughbred mare is eight years old. She has slight colic. Defecation is scarce. Only small and coated balls are dropped. Temperature, respiration and circulation are normal. Carefully nursed, she improves. But the coprostasis remains the same. Oily purgatives are repeatedly given. Rectal examination revealed sensibility of all the pelvic organs. Suddenly violent colic of intestinal congestion appear which are relieved by venesection and opium and morphia. The mare is in great state of prostration and she is fed with milk and receives two litres of physiologic serum every day. She dies after one month of treatment.

Post Mortem.—Generalized peritonitis with numerous peritoneal adhesions. Of the two principal, one unites the spleen to the inferior walls of the abdomen and the other unites the pelvic arch of the large colon to the bladder. In the center of this there are also several abscesses. In the cavity of one there was a small piece of straw. The bladder was shrunk and contained but little urine. There is perinephritis. The right kidney has an abscess in the cortical substance as big as a nut. The left kidney contained three large calculi, encysted and yet free. There was also pericardial exudation, hypertrophy of the heart, enlargement of the spleen and cystic ovaries.—(*Rev. Gen. de Med. Veter.*)

A CASE OF OESOPHAGISM [*Mr. Berton, Army Veterinarian*].—Before being operated a mare receives 20 grammes of sulfonal in 100 grammes of dry bran. During the operation she struggled very much. Taken afterwards in her box, she takes a mouthful of hay and suddenly mastication stops, the expres-

sion becomes anxious, the lips are stiff and the head is extended on the neck, which is the seat of violent spasms. These are accompanied with groans and abundant bilateral escape of viscuous matters from the nose, and yellow discharge mixed with crushed hay. During three-quarters of an hour these spasms came at intervals of ten minutes and gradually less in severity. After a few hours everything is nearly normal, except some general depression. There was no pain, except after three days, when cervical myositis was well marked.—(*Rev. Vete. Mil. and Rev. Gen.*)

BULBO-CEREBELLOUS TUBERCULOSIS IN A DOG [*Dr. L. Marchand, Prof. Petit and Douville*].—The lesions found in the nervous centers of this dog consisted principally in a tumor, hard, irregular and adherent, situated in the cerebellum, and with also many hard whitish granulations on various parts of the bulb. Tuberculous bacilli were found in those neoplasms.

The symptoms presented by the animal were very peculiar. At first he only exhibited anorexia and a great sensibility, hyperstenia, on the back of the head and on the neck But after a few days great troubles were manifested in locomotion. He staggers in walking, at each step his body balances from one side to the other. Left loose, he goes in short trot or walks head down with his eyes fixed and staring, careless of the calls of his master, yet avoiding the objects in front of him. As he stops, he sits down and remains as in a state of cerebral torpidity. If then pressure is made on the neck, he jumps of a sudden, raises himself straight sitting on his haunches and then turning once half round upon them, resumes the standing position and goes about with his short-step trotting gait.

What is peculiar is that this sudden vertical position and of sitting on his haunches, he only assumes it after a moment of rest and when the poll of his neck is being touched. And if this is done while he is walking, he does not mind it and continues with his ataxic movements, inco-ordinated, until he drops down again. In his kennel the animal remained quiet, laying down, the nose in his bedding, indifferent to the food that is put near him, but chewing and swallowing it well if it is placed in his mouth. The general sensibility and tendinous reflexes were preserved. Tumor of the cerebellum was suspected, and the dog destroyed. He presented the lesions alluded to above.—(*Revue de Mede. Veter.*)

BELGIAN REVIEW.

By Prof. A. Liautard, M. D,. V. M.

Two Cases of Gangrene [*Mr. C. Verlinde*].—1. *Gangrene of the Foot.*—This was in a horse lame since two days when seen by the writer. He then was very lame on the left fore leg. This was wrapped up with a coarse cloth held with three thin cords, one on the coronet, another immediately above the fetlock and the third near the knee. The whole was covered with a coat of dry clay. When this apparatus was removed, the marks of the superior cord above the fetlock were seen by a circular depression about one centimeter deep. The horse had a dry corn on the foot. But certainly not enough to account for the excessive soreness. However the hoof began to get loose around the coronet and the case assumed a bad aspect. Four days later the foot sloughed away, gangrene of the lower extremity of the leg strangulated by the cord fixed above the fetlock. The animal died in great agony after two days, the owner not being willing to have him killed.

2. *Strangulation of the Arm in a Dog.*—A shepherd dog is lame on three legs. The left fore is swollen from the elbow down to the paw. The claws are thick and spread apart by the swelling. A close examination revealed the presence of a rubber ring passed round the arm. It is imbedded in the skin and flesh and concealed by a thick edge of inflamed tegument. With a guarded bistoury the rubber is cut off. It was a ring one millimeter thick and two or three wide, having such limited power of construction that it seemed difficult to understand how it could have done such a mischief. The removal of the ring stopped the progress of the gangrene and recovery was completed in three weeks.—(*Bullet. de Med. Vet. Prat. Malines.*)

Accidental Amputation of the Tongue [*Mr. C. Verlinde.*]—Just bought a horse, said to be a little ugly; is taken to the blacksmith to be shod. To keep him quiet, and under better control, a rope is passed in his mouth, secured round the neck to hold his head down and tied to the bar of the stocks where the animal was placed. When the shoeing is finished and the horse was left free, bloody saliva is observed escaping from the mouth. Taken to his stall, the horse refuses his food and blood

collects in his manger. The inferior lip is swollen, bloody saliva escapes abundantly at the commissure and a transversal circular deep wound is on the tongue involving almost its entire thickness. The free extremity of the organ is swollen and holding just with a thin peduncle that remains as part of the tongue. As the case is likely to be the subject for a law suit, nothing can be done except cleaning with boric water solution. The tongue kept on getting more swollen, fœtid odor came from the mouth and finally after the inspection of the experts appointed by the courts, the gangrenous extremity was amputated with the ecraseur. It measured 11 centimeters in length and weighed 260 grammes. This piece was hard blue-greenish in color and had a very offensive odor. The animal seemed to have some relief but had great difficulty in eating and drinking. Cicatrization took place quite rapidly. The horse was sold by order of the courts and lost sight of.—(*Ibidem.*)

Epizootic Papillomatous Stomatitis of Goats in Belgian Congo [*Mr. Ch. Ficket*].—This disease, which has not been described so far, attacked twenty young animals out of a herd of thirty-three, and five have died after severe diarrhœa and progressive loss of condition. The disease started when the young goats were but two weeks old and lasted between ten and fifteen days. The principal lesion was the growth in the mouth of papillomatous vegetations without ulcerations. These vegetations were filiform or irregularly ramified, more abundant on the anterior part of the lower jaw and interfering with the closing of the mouth and the motions of the tongue. This organ was also covered with some but less prominent. There were some again on the palate. The nostrils were free. The teeth were covered by the vegetations but were healthy and firm in their alveoli. The microscopic examination showed that the lesions were superficial, involving the papillary body of the mucosa only and not the deep layers of the mucous membrane. The contagious nature of this attack is not rigorously established and feeding is considered as the probable cause. Similar attacks of the disease have been recorded in other occasions in various parts of the Belgian Congo.—(*Annales of Bruxelles.*)

Tumors in the Heart of a Horse [*Mr. J. Hauben*].—While in harness a three-year-old colt drops down and is unable to get up. Paralysis a frigore is diagnosed. Six litres of blood

are taken away from him and suddenly he gets up, goes eating and appears as if nothing had happened. Some three years later the writer is called for a five-year-old animal, recently bought, which behaved in the same manner, and after three hours got up also. Fifteen days later this horse has another attack, and then comes out the history that he has been subject to them, has been sold and resold on that acount. He is the same horse as the one seen three years before. At his last attack, his general condition is bad, pulse 90, respiration quick and deep, temperature 39.5° C. Percussion indicates dullness over the heart, which on auscultation gives irregular sounds. The animal dies after forty-eight hours of treatment of digitalis. Post mortem: Heart is quite large, softer than usual. Right ventricle is dilated and almost filled with an irregular and soft tumor, which is attached by peduncle to the fibrous circle of the auriculo-ventricular opening. Floating in the cavity, it measures 15 centimeters in length, 7 in width and 5 in thickness. The right auricle is normal. In the left ventricle there is also a tumor, similar to the other, but smaller. It is fixed on the base of the sigmoid valves. On section, the two tumors, identical in nature, are homogeneous and presented the macroscopic characters of myxomatous tumors.—(*Ibidem.*)

GERMAN REVIEW.

By John P. O'Leary, V.M.D., Buffalo, N. Y.

Local Anæsthesia by Means of Cocaine-Adrenalin [*Prof. Dupuis and Van den Eckout*].—In order to induce prolonged anæsthesia in the region of an operation, the author employs for a local anæsthetic cocaine, alypin and stovaine combined with adrenalin. The latter is a general and local vasoconstricting agent, which when brought into contact with a mucous surface or injected into the subcutaneous tissues contracts the blood vessels, resulting in an intense anæmia of those parts which have absorbed the solution without producing a general reaction. This vasoconstriction lasts a few hours. When we add adrenalin to cocaine we prolong the anæsthesia three hours, and at the same time minimize through this slow process the danger of poisoning by the rapid resorption of the cocaine. For many reasons the author selected cocaine, stovaine and alypin in the comparative

experiments carried out upon horses, and in consequence advises the following formulæ to be prescribed: Hydrochlorates of cocaine or stovaine or alypin, 20-30 grammes; hydrochlorate of adrenalin, 1/1000—5 drops; distilled water, 10 grammes. This solution is employed by the author for the diagnosis of foot lameness, also in various operations, tracheotomy, cartilaginous quittors, punctured wounds, canker and so on. Anæsthesia sets in from 15 to 20 minutes after the injection and lasts three hours. Stovaine and alypin have the same properties as cocaine, only that they are somewhat less poisonous. As for the horse, which bears the action of cocaine tolerably well, it is not of so much importance, nevertheless in canine practice we must be cautious, as symptoms of poisoning have been already reported after the customary doses were administered. The dose of both agents is the same as that of cocaine. The author remarks in conclusion that in consequence of the knowledge of the action of this drug, it is no longer practicable to perform operations. As the Javarts, the separation or removal of the sole and so on, without previously rendering the seat of operation insensible to pain.—(*Berliner Tier. Wochenschrift,* No. 19, 1910.)

THE horse supply of every civilized nation is short of the increasing demands. All Europe wants more horses. Drafters for the city and farm work, cavalry for the great armies, and coach and carriage horses, in spite of the automobile. All of these horses are in urgent demand at higher prices than ever before known and the growing cities and short supply of good horses has forever banished cheap prices. America is the only country that can increase the supply for an export trade. We have introduced all of the improved breeds of Europe and improving our twenty million farm horses up to the world's market demands. The prices for draft horses impel the farmers to breed drafters, and when the military authorities pay prices to justify, the farmers will raise the cavalry horses in type and numbers to meet the demands. France and England are eager for more cavalry horses, and France pays higher prices, but the draft horse demand is so urgent and prices are so high that even the high priced coachers are neglected and all of the French provinces are raising Percherons for the American trade and high city markets. Already the more active demand of fall trade has set in with increasing eastern buyers.—Extract from Editorial, *Live Stock Journal* of September 8, 1910.

SOCIETY MEETINGS.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The twenty-first annual meeting of the New York State Veterinary Medical Society was called to order by President Holingworth promptly at 10 a. m., August 25, 1910, in the lecture room of the New York State Veterinary College. The president immediately introduced the Hon. Randolph Horton, Mayor of the City of Ithaca, who bid the society a hearty welcome. Mayor Horton spoke intelligently of the advancement of the veterinary profession and its great importance in the scientific and economic world, dwelling particularly upon its great value in preventive measures and protection not only to animals, but also the health and welfare of mankind. Mayor Horton closed his remarks by paying a pleasing tribute to the honor and respect of Dr. Jas. Law for the great work and worth he has been not only as a teacher of veterinary medicine but as an educator and citizen to be admired and loved.

In response on behalf of Cornell University, Mr. Mynders Van Cleef immediately made those present feel that not only was the City of Ithaca glad of their presence but that they were equally as welcome under the roof of Cornell University. Mr. Van Cleef invited them to inspect other departments of the university so that they might see other lines of education that are being carried on in that great institution. He, like Mayor Horton, could not resist reviewing Dr. Law's history briefly, going back to the time of his first association with the university and giving great credit to him for the progress of the veterinary profession and the veterinary department of Cornell University, explaining how gracefully the mantle of this great man had now fallen upon the worthy shoulders of Dean Moore. He outlined the hope of the university in the enlarging of the Veterinary College and spoke of the necessity of well-trained veterinarians to care for the nearly two hundred million dollars worth of livestock in this state.

The box containing the books having been delayed in the express office, the minutes were not read at this time.

The secretary's report was then read. This report pointed out the different methods pursued during the past year in augmenting the membership of the society; endeavoring to bring back into active membership many of the old guard who had become indifferent to the society's work; also pointed out that the year had been equally as successful in gaining new recruits, since there were more applications for membership than in any other year since the organization of the society. The advancement in membership in the last decade was also pointed out, it being an increase of about a hundred. The secretary also spoke of the failure during the past legislative season to amend our law and the necessity of union in our ranks; he suggested that a committee be appointed, such committee being large enough to take in, the views of men who have given time and thought to the legislative question and men in whom the society had confidence, to draw up or frame an amendment to our law, which would be satisfactory to the society to the support of this bill, and it was his opinion that there would be no question but what such a bill could become a law. Regularly moved, seconded and carried that the secretary's report be accepted and placed on file.

Dr. H. J. Milks, chairman of the Committee on Therapeutics, read a well-prepared report which was discussed by Drs. Berns, Williams and DeVine. Morphine and compounds containing it was particularly discussed and it seemed to be the opinion of all that morphine was an unsatisfactory, if not a dangerous, drug in equine practice, but, on the contrary, of considerable value in canine practice. Dr. Berns expressed disappointment that new medical preparations were not more deeply gone into and invited the experience of the members present along lines of new treatment. Drs. DeVine and Williams reported some cases of morphine poison in horses; Dr. Williams gave his opinion that chloroform in inhalation was perhaps the best antidote for this condition.

Motion was made at this time that the president's address be deferred until after dinner that evening.

Report of Legislative Committee was then read by Dr. Kelly. After some discussion by Drs. Kelly, Fish, Switzer, Williams and DeVine, report was referred to the Executive Committee.

Dr. Berns gave an extensive and interesting report on animal diseases. He dwelt particularly on the glanders situation

as affecting the City of Brooklyn and the stables which came under his immediate supervision, claiming that most of the trouble was in small stables of the poorer class where one or two horses were kept and not in large stables that were under veterinary supervision.

The society at this time adjourned for noon recess, to meet again at 2 p. m.

Meeting reconvened at 2 p. m. and discussion of Dr. Berns' report on animal diseases was again taken up by Dr. Williams; he stating that most of the isolated cases of glanders occurring in the rural districts were horses that had been sold in the City of New York, or some other large city, and shipped into the country and resold by dealers. Dr. Williams desired an expression as to how this matter could be changed and how this practice could be checked. He cited a case which recently came to the clinic without a history and without the usual manifestation of clinical symptoms; the animal being very stiff in her spinal column and could not lower her head or raise it above the level of her body, or turn it to the right or left, and carried a continuous fever. Glanders being suspected, the animal was tested and suspicions verified..

Dr. Hollingworth made inquiry as to the extent of glanders in the different localities and what measures could be taken to prevent the selling of glandered horses in New York City and their distribution throughout the state.

Dr. W. L. Baker reported that there was very little glanders in and about Buffalo.

Dr. Berns expressed his opinion from thirty years' experience that horses that are well cared for, under favorable conditions, will in many cases make a recovery from infection if slightly affected with glanders, and stated that if all horses in New York were tested we would be surprised at the number that would react to either the mallein or agglutination test. It was his opinion that fully 20 per cent. would react to these tests. Dr. Berns stated that it was his practice to place suspected horses under treatment of Fowler's solution of arsenic and iodide of potassium; this treatment is sometimes continued from two to five months. Dr. Berns is of the belief that in taking blood for the agglutination test it should be taken before mallein is injected.

Dr. Williams asked Dr. DeVine if there was any provision in the statute that would prevent the sale and shipment of these

animals from New York City. Dr. DeVine stated that there was nothing in the statute that would cover it any more than the sale of diseased animals, and that where an animal was not known to be diseased or showed any evidence of disease, the present statute would not cover it. Dr. Milks was of the opinion that there were nearly as many affected horses shipped from Philadelphia as there were from the New York market.

Dr. Cochran stated that the present indemnity allowed by the state was a disadvantage in the control of glanders. Dr. Ellis in contradistinction pointed out many advantages of the present state law in the control of glanders.

Dr. Stone gave his experience in Binghamton and his belief is that most infected animals came from New York City. It was the general opinion that but few cases originated with green horses from the West.

Dr. Law stated that it was not a question of their coming from the West, or any other point, but whether they have come from where glanders exists, and that New York seemed to be the danger point. He made special mention of the danger of infection from cars. Dr. Kelly stated that he found but very few cases of glanders among western horses, but usually traced it to horses that came from Boston or New York.

Dr. Hollingworth stated that we as practical veterinarians ought to be able to get together and make resolutions that would be an advantage in the control of this disease.

Next in order was the report of the Committee on Clean Milk by Dr. R. C. Reed. Dr. Reed gave a brief report, attributing much credit to the work done by President Hollingworth in getting out and distributing pamphlets, as well as having taken the matter up at different society meetings and publicly. President Hollingworth and Dr. Law each stated a case where the veterinarian's advice on the feeding of milk and care of an infant had been of great value. Dr. Reed cited a case in his private practice showing the close relation of baby troubles with the bacteriological condition of milk; the condition being so marked that the physician in charge of the case called his attention to the great improvement of the child with the improvement of the condition of the milk.

New Business.

The secretary then read an invitation from the general manager of the Niagara Falls Bureau of Conventions asking our

society to hold its next meeting at Niagara Falls. Another communication of interest to the society was one of the National Health Department, in which they asked for the co-operation of the society relative to establishing a National Health Department. Regularly moved and second that this communication be referred to the Executive Committee. Similar action was taken on a communication received from the World's Panama Exposition Company.

A list of the members over three years in arrears was then submitted to the Board of Censors. After the Board of Censors had regularly examined the same, Dr. Berns, as chairman, reported as follows: " Under the circumstances I, as acting chairman of the Board of Censors, think that we shall have to allow the law to take its course, and drop these members from the roll as active members of the association." It was regularly moved and seconded that the report of the Board of Censors be adopted. Carried.

Reading and discussion of papers was then taken up. Dr. David W. Cochran presented a very able paper on " Azoturia." Dr. Cochran's paper was practical in its entirety and provoked lively discussion by Drs. Ellis, Williams, Kelly, Patton, Berns, Baker, Switzer, Stone, Morrow, Hollingworth, McCrank and Law.

All agreed pretty much on the conditions which seemed to bring on the disease as well as its general characteristics. Slightly different methods of treatment were spoken of by the various gentlemen engaged in the discussion, but blood letting and keeping the animals as quiet as possible seemed to be the treatment favored by most. The necessity of stopping the animal at the very onset of the disease was agreed to by all to be the most important step to take. It was likewise agreed that the weight of the horse as well as the altitude of the locality has much to do with the prognosis.

Dr. Moore, as chairman of the Commtitee on Necrology, read his report, paying a most loyal tribute to the departed ones of our profession as follows:

" The Committee on Necrology has to perform the sad duty of officially calling the attention of the society to the loss it has sustained during the past year through the death of one of its members and of two distinguished leaders in the profession. The phenomena of life and death are constantly before us, but not until those who are trained to do humane service are called

to the 'Great Beyond' do we fully realize the exacting demands of the irretrievable law that sooner or later terminates all individual activity. There were living among us a year ago those interested and active in the attainment of professional service and ideals, who to-day are known only by their works and the memories of their personal friendship and helpfulness. Thus it is that our ranks are ever being broken and the real progress made by the fallen becoming crystallized as fundamental knowledge for the new recruits. In the inventory of our professional estate we should ever be mindful of the twofold origin of our possessions; the lesser of them is found in our individual effort and discipline, the greater springs from the life work and sacrifices of others. In the struggle for professional preferment there is a tendency to forget the constantly increasing inheritance that is being handed down from the lives of other members.

"As we assemble for the first time after the departure of our member and co-workers we are depressed by a sadness that words cannot express. In our absolute wonderment as to why valuable young lives should be stricken out or the years of the worthy be ended, the words of the prophet of old that 'at evening time it shall be light' suggest that eventually the mysteries of life and death may be explained. To-day as we mourn the loss of a member and co-workers we should be mindful that by their departure we are obligated to make our own lives more valuable because of the inheritance they have left us.

DR. E. H. NODYNE.

"Dr. E. H. Nodyne, an active member of this society, lost his life in an automobile accident in Fulton, N. Y., early in the spring of this year. Dr. Nodyne was a graduate of the Ontario Veterinary College and for eighteen years has been engaged in the practice of his profession. For the last eight years he had resided in Fulton. His professional work was distinguished by his activity as a meat and milk inspector, and as a leader in his community in a rational eradication of bovine tuberculosis. In these as well as in his private practice he had made a commendable record. In his untimely death the City of Fulton has lost a good citizen and the veterinary profession has been deprived of an active worker and one who gave much promise for a still greater future.

DR. LEONARD PEARSON.

"Early in the fall of 1909 the news reached us that Dr. Leonard Pearson had died at Spruce Brook, Newfoundland. Dr. Pearson graduated from the Veterinary department of the University of Pennsylvania. In 1890 he graduated from the veterinary department of the University of Pennsylvania. In 1897 he was elected its dean. In recognition of his valuable services the University of Pennsylvania conferred upon him in 1908 the honorary degree of Doctor of Medicine.

"Possessed of a logical understanding of his profession and its needs, eloquence and perfect clarity of expression, a large intellectual and social sympathy and a dominant instinct for progressive action, he was accorded a foremost place by his fellows and co-workers in the field of veterinary education and practice. These same attributes won for him a like regard in the deliberations of all bodies having to deal with veterinary sanitary science. His memory is cherished as a man whose life, though short, stands as a notable example of one who gave his years unselfishly and devotedly to the upbuilding of his chosen profession. Measured by years, his life was short; measured by achievement, he lived long. As a scientific veterinarian in the broad sense we honor his memory; as a man and a co-worker we mourn his loss.

DR. ANDREW SMITH.

"The death of Dr. Andrew Smith occurred about three o'clock, August 15, 1910, at his home in Toronto, Canada. Dr. Smith was born at Dalrymple, Scotland, in 1835. He studied veterinary medicine under the renowned Professor Dick, of Edinburgh. In 1861 he came to Canada in response to a call from a large number of horse owners who felt the need of better veterinary service. In 1862 he gave a course of lectures in Toronto to a small class of students. This was the beginning of the Ontario Veterinary College over which he presided until 1908, when it was taken over by the University of Toronto. Dr. Smith was one of the most widely known veterinarians in the country. Three thousand veterinary students have passed under his instruction. At the opening exercises of the University of Toronto in 1908 Mr. Nelson Monteith, their minister of agriculture, and Dr. Rutherford, veterinary director-general of Canada, spoke most eloquently of the broad influence of his work.

"Dr. Andrew Smith was the second pioneer in veterinary education in America. A contemporary of Liautard. His strength of character and his genial spirit are attested by the devotion of his many pupils and the recognition of his high social and civic honor by his fellow citizens. He labored under many difficulties, but he lived to see the college wrought out by his own efforts become a part of a great educational institution with bright promises for the future. Unlike many others, he was granted the high privilege of serving mankind for more than three score years and ten and of being a witness to the transfer of his high professional trust to a board of directors charged with the sacred duty of bringing to his single-handed efforts the wealth of modern physical and biological sciences. His life circumscribed an epoch in veterinary education and his death is lamented by hundreds of those who as pupils sat at his feet.

"It seems fitting that this society should spread upon its minutes this expression of our appreciation of the life and of the work of the departed, and of our sorrow at the loss of our members and these distinguished leaders, whom in life we honored as conscientious workers and pioneers in their respective fields of veterinary activities.

"(Signed) V. A. MOORE, Chairman:
"R. W. ELLIS,
"J. A. MCCRANK,
"Committee on Necrology."

It was regularly moved and seconded that the report be received and spread upon the minutes.

The meeting then adjourned to have photographs taken in front of the building.

"Pursuant to adjournment a paper was read by Dr. Leonard. entitled "Therapeutics of H. M. C." This paper was discussed by Drs. Baker, Ellis and Hollingworth. All reported that this drug seemed to work very satisfactorily in small animals, but decidedly unsatisfactory in the horse.

The next paper presented was that by Dr. Udall on "Vaccines." Dr. Udall supplemented his paper by some demonstrations all of which were interesting and instructive, particularly to those who have not the advantages of such an institution as Dr. Udall has to carry on such interesting and valuable work.

Meeting was then adjourned.

Meeting again called to order at 8.50 p. m. in the dining room of the New Ithaca Hotel. Dr. Berns occupying the president's chair.

Dr. Baker moved that a copy of the report of the Committee on Necrology be mailed to the respective families of the deceased. This was regularly seconded and carried.

President Hollingworth then gave his address. Hollingworth like, his address showed evidence of extensive thought and considerable application during the entire year to the society's necessities and advantages; his familiarity with the professional and agricultural interests throughout the state was evidence of his activities during the year, that he might formulate for the society's consideration the changes most desired as he saw them. He presented such views in his characteristic optimistic way which gave spirit to the doubtful and depressed as to the future of our profession. He suggested that our society consider the publication of the proceedings and urged every member to make special effort to increase its membership. He reviewed our failure to receive legislation asked for the past year and suggested that any proposed amendment be taken up in our society and acted upon so that the Legislative Committee may go to the legislature asking for things that the society as a whole are in favor of. He spoke with regret of the failure of our veterinary colleges to receive adequate appropriations from the hands of the legislature, and made a strong appeal to the profession to assist in such good causes; and added that every one should take an interest in clean politics. In closing, he pointed out our duties in the protection of human life by proper education along the lines of inspection of meat and milk products, and in turn the public's obligation to us for work of such a character.

Second Day—The meeting of the second day was regularly convened at 10 a. m. Paper was read by Dr. B. Switzer, entitled "Mistaken Diagnosis," which was particularly interesting to every practitioner; the subject being a horse presenting what appeared to be a deep-seated abscess which proved upon investigation to be hæmatoma involving an artery. It impressed all who heard it with the necessity of cautious procedure as to the use of a knife in vascular regions.

Dr. Morris, as chairman of the Committee on Medical Jurisprudence, then favored us with a very interesting talk on what the committee had been doing in advancing the suggestion of utilizing prisoners who had been condemned to die for experi-

mental purposes with a hope of determining certain principles that would be of great advantage to the human race at large. The committee's report was regularly received.

The chairman of the Auditing Committee next reported that they had audited the books of the secretary and treasurer and found them to be correct. It was regularly moved, seconded and carried that this report be received.

This was followed by the reading of a paper by Dr. A. Schlesinger, Jr., entitled "A Lazy Horse," the subject being a young animal devoid of energy, which proved to be due to extensive infection of intestinal parasites.

Following Dr. Schlesinger's paper, Dr. J. F. DeVine presented a chart giving in detail the results of tuberculin test of 2,001 animals and the post-mortem findings, explaining that the statistics were compiled to determine, if possible, the relation between temperature readings and post-mortem findings. The compilation pointed out that most generalized cases were animals carrying temperatures between 104 and 106 but with not enough regularity to be of any guiding value. This paper was discussed by Drs. Berns and Morris.

Dr. E. S. Sunderlin then presented a very interesting paper on the "Location of the Upper Lymphatic Glands and Ducts in the Calf."

The next paper was that of Dr. H. J. Milks, subject, "Vaccination Against Hog Cholera." This paper was discussed by Drs. Simpson, Hollingworth, Law and Moore. The discussion brought out clearly the necessity of diagnosis between hog cholera and poison resulting from feeding of garbage. Dr. Law pointed out that this poisoning by garbage was usually confined to a particular herd. Dr. Moore discussed the question of serum therapy, and thought there was an opening here in which a great deal of good might be accomplished, and it was well for veterinarians to familiarize themselves with the question of hog cholera vaccination.

The secretary then read the names of those proposed for membership. In the absence of some of the members of the Board of Censors the chair appointed Drs. Ackerman and Morris. The meeting here adjourned to go into executive session.

Pursuant to adjournment the meeting reconvened at 2.15 p. m. The minutes of the last meeting were then read and it was regularly moved, seconded and carried that they be accepted as read. The chairman of the Board of Censors then reported that they

had carefully examined all applications and desired to report favorably upon the following gentlemen: Jas. S. Ellicott, Harry B. Risley, John McCartney, Chas. Jamison, C. D. Pearce, Chas. S. Chase, Albert E. Merry, W. L. Gilbert, Walter D. Bennett, D. H. Udall, F. E. McClelland, Moffitt Smith, J. B. Knapp, A. B. Kelly, P. V. Weaver, G. P. Jeffery, Jos. G. Hill, Wm. H. Salisbury and Wm. H. Mahoney.

Motion regularly made and seconded that the secretary cast a ballot for the election of the gentlemen whose names were reported favorably by the Board of Censors.

Under miscellaneous business Dr. Henry Cady read a resolution in regard to the prosecution of illegal practitioners. Dr. Baker moved that the secretary be instructed to begin prosecution of illegal practitioners in the name of the society. This motion was withdrawn after some discussion. Dr. Ackerman moved that the society designate Mr. E. G. Scribner and that he be authorized to bring action on behalf of the society. Motion carried. * * *

Following some resolutions by the Committee on By-Laws, and the reading of the report of the Executive Committee, a paper was read by Dr. J. A. McCrank entitled "My Experience with Choking Animals." The subject seemed to be of particular interest and was quite lengthily discussed by Drs. Williams, Baker and Law; all agreeing that it was usually dangerous procedure to attempt to drench for the relief of this condition as the fluid is quite apt to return and pass down the trachea. Dr. Law pointed out an interesting fact learned from observation, that where an obstruction was close to the cardia bloating did not take place.

The next paper entitled "Verminous Embolism of the Cæcal Arteries," was read by Dr. I. L. Buchanan. After a discussion of this paper by several of the members the meeting was adjourned to reconvene again at the New Ithaca Hotel. The meeting was called to order at 8.30 p. m. in the dining room of the New Ithaca Hotel. Election of officers was then in order and resulted as follows:

President, Dr. E. B. Ackerman; vice-president, Dr. John F. DeVine; secretary-treasurer, Dr. H. J. Milks.

Election of Board of Censors resulted as follows: Drs. Switzer, Stone, Berns, Morrow and Cady.

Selection of place for next meeting was then in order, the following places extending an invitation: Niagara Falls, Ithaca

and Brooklyn. After a pleasant and friendly discussion it was put to a vote and resulted in Brooklyn being selected as the next place of meeting.

Dr. Moore read a very instructive and interesting paper on "Meat Inspection." Owing to the lateness of the hour and the volume of detail business to be finished it was deemed best to make the discussion as brief as possible. Report of the Committee on Resolutions followed.

Third Day—Meeting called to order by President Hollingworth.

The Committee on Resolutions presented a resolution on meat inspection. Regularly moved and seconded that the resolution be adopted. Motion carried.

Dr. Curry made the motion to reopen the case of Dr. Cady. Motion seconded by Dr. Morrow. Carried.

Regularly moved, seconded and carried that the following resolution be adopted:

"Further resolved, That Dr. J. F. DeVine be and hereby is authorized, empowered and directed to institute such action and to perform every act necessary so to do, including the accumulation of evidence, employment of an attorney and the signing of all papers necessary for the prosecution of such action."

Meeting adjourned to the operating room, where the following interesting cases were witnessed:

Bay gelding: Neuroma of the median nerve. No operation.

Black mule foal: Scrotal hernia; covered operation under chloroform anæsthesia. F. F. Fehr, operator.

Bay mare: Recovered fracture of the metatarsus.

Brown gelding Peri-anal fistula.

Bulldog: Entropium; superior and inferior. H. M. C. anæsthesia. Dr. R. C. Reed, operator.

Black gelding: Roaring operation. J. N. Frost.

Bay mare: Spaying; vulva showed granular inflammation so that operation was considered inadvisable.

Bay gelding: Extreme volar flexion of the anterior fetlock. Tenotomy, by Dr. W. L. Williams, without overcoming flexion.

Owing to the fact that many of the members had planned to attend the national meeting, the list of ladies in attendance at this meeting was fewer than usual, but those that did come re-

ceived the same hospitable consideration and attention as has always been characteristic of the wives and daughters of the members of the faculty.

J. F. DeVine, Secretary.

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The twenty-seventh annual meeting of this association was called to order at Springfield, July 12-13, 1910, at 10 A. M., with President Glendenning in the chair. The minutes of the previous meeting were read, and on motion were approved.

Admission of New Members.

Dr. Alverson was appointed to fill a vacancy in the board of censors, pro tem; eight petitions for membership were read and were O. K.'d by the board of censors; it was moved and seconded that the secretary be instructed to cast the vote of the association, and the applicants were elected to membership.

Program.

Demonstration in securing hog cholera virus. At this point Dr. A. T. Peters gave a short explanation of the progress that has been made in this direction. The hog was then secured and with Drs. Niles and Juckiness, was bled; a post mortem was then held on the carcass, which weighed forty-five pounds, and four hundred and fifty-five ounces of blood was secured, and short explanations of the post-mortem lesions and many questions were answered relative to the subject.

Adjourned for lunch until 2 P. M.

A splendid lunch was prepared by the ladies of Springfield, and was enjoyed by 150 veterinarians and visitors. The Honorable Charles H. Deneen also participated in the festivities.

Mr. Phil. H. Hanner introduced the Governor, who gave an interesting talk and demonstrated his faith in the State Board of Live Stock Commissioners, the State Veterinarian, Dr. Peters, the director of the biological laboratory, and it was patent to all that he was a close observer of the veterinary profession and had faith in it.

THE GOVERNOR'S ADDRESS.

"Prior to the enactment by the Forty-fifth General Assembly of legislation conferring upon the Board of Live Stock Commissioners jurisdiction over the disposition of animals affected with disease, there was no legislation upon our statute books empowering the Commission to take any steps for the protection of the public health. This legislation, therefore, was a new departure and has naturally resulted in increasing the work of the Commission. One of the most important branches of its work now is that which is done in combating bovine tuberculosis. A prime requisite for the successful carrying on of this work is a plentiful supply of pure vaccine for the use of the Commission in making its tests; and this is what makes so important the erection of this great laboratory.

The construction of this laboratory is another step forward in the protective work of the Live Stock Commission. It was chiefly through the presentation of the matter to the General Assembly by the Commission that the enactment of the law appropriating money for its erection was brought about. It will be undoubtedly of great service in improving the work of the Commission in the fight against tuberculosis and hog cholera. Through its control of its laboratory, the Commission will be enabled to manufacture its own biological products, and thus be able to determine the quality of the vaccines to be used in its tests. This is very important, for in this way not only will the work of the Board itself be strengthened, but it will be able to furnish the live stock men throughout the state thoroughly reliable material for private tests. I understand that at present the branch for the manufacture of hog cholera vaccine only is in operation, but that within a short time the Commission hopes to have a number of other biological products ready for distribution. This will undoubtedly lead to a great lessening of the losses resulting from diseases of live stock and will encourage the growth and increase the prosperity of the industry by reducing these losses to the minimum. The encouragement of the live stock industry would be of great service also to the farming industry generally through its indirect effect in keeping up the fertility of the soil.

During the discussion in the General Assembly of the legislation under which this laboratory was erected, a question arose as to whether or not it should be connected with the State Uni-

versity, and the argument was presented by the Board of Live Stock Commissioners that the laboratory should be under its sole control, because the law had confided to the Board sole charge of the policing and protection of the live stock industry in the state. It was urged by the Commission that as the law had consigned to them the duty of devising ways and means for the protection of owners of live stock against preventable losses by disease, they should have full control of the manufacture of the vaccine which was one of the principal agents used in carrying on the work. As the vaccines manufactured in this laboratory are to be used by the agents of the Board in making their tests, it is, I think, well that the Commission has control of its production.

It should be the ambition of the Commission to make this laboratory one of the best of its kind in the country for careful scientific research. This can only be done by a strict adherence to high and approved standards in carrying on the work of investigation and research and by being satisfied with the attainment of nothing less than the best procurable results. I understand that it is the intention of the Commission to publish in its annual reports the results of the tests and experiments conducted here. This should prove a valuable addition to the official scientific literature of this important subject. Two reports are, I am told, to be issued; one in popular, the other in scientific, form.

It is with pleasure that I have learned of the very high class of work that the State Veterinarian has been carrying on throughout the state. His addresses at Chatauqua and at farmer's institutes upon topics relating to veterinary surgery and the care of live stock, have not only been of great interest to his professional associates, but of great practical value to farmers and owners of live stock as showing the best methods of taking care of animals. The State Veterinarian, also, was one of the most assiduous workers for the laboratory, and is to be cordially commended for the part he has taken in procuring its erection.

This is an occasion which is naturally of the widest interest to live stock men throughout the state, and during your stay here I trust you will find occasion to discuss such live stock questions as are needing investigation and arrive at some concensus of opinion as to their solution which may be of value to the Live Stock Commission in its future work and furnish guidance to the General Assembly in connection with any needed legislation."

A group picture was then taken by the official photographer.

Mr. Nicholas Roberts, secretary of the Commercial Club, was introduced, and gave the members of the association a hearty welcome.

Dr. Green, Chairman of the State Board of Control of Charitable Institutions, was introduced and very briefly commented on the scientific investigation along the line of preventable diseases.

Professor Blair, State Superintendent of Schools, commented on the relation of the school children and the meat question, and stated that it depended largely on what a child ate, as to how he was enabled to think and act.

Mr. McCullough, State Auditor, was then called on and was much pleased with what he had seen and heard, and thanked the association for the opportunity of being present.

Judge Humphrey, was then called upon and spoke of the veterinarian and the live stock interests, and stated that veterinarians were being recognized as learned scientific men, closely related to the commercial interests in the state.

Dr. Niles spoke of the progress the different states were making in the control of hog cholera, and said the time was not far distant when that would be practically eliminated.

The different methods of vaccination were then taken up, and explained by Dr. Peters, and were afterwards demonstrated on the live subject, and a number of the members assisted in the injecting.

There was also a demonstration of the method of making the hog cholera serum ready for market. A conference of the day's work was then held; this consisted of questions on the different subjects of the day's work, and a general experience meeting; a number of the members telling of their experience with the serum, and commenting on the same; all seemed to be very much pleased with the results. Meeting then adjourned to meet the following morning at 9 A. M.

July 13.—Meeting reconvened: Reviewing a tuberculin chart and a physical examination of the animals. A great deal of interest was displayed in this subect, and the cattle were examined and subjected to all the known tests. The cattle were then slaughtered and post mortems held; the different tubercular lesions were demonstrated by Dr. Mattitall, Chief of B. A. I. staff of the National Stock Yards at St. Louis, and Dr. Paul Juckiness, State Veterinarian of Nebraska; a general play of

questions and answers took place in which most of those present took part. Adjourned for lunch to reconvene at 1.30 P. M.

Dr. A. T. Peters presented a case of sterility in a cow; he gave a very interesting talk of the causes and symptoms and method of operation, and stated that this was frequently caused by abortion; the two diseases must necessarily be considered together.

A free discussion was had on the different methods of cure and control.

This closed the practical part of the program.

Mr. Haner, Chairman of the State Board of Live Stock Commissioners, was introduced and expressed his satisfaction at the interest taken, the large number of veterinarians present, and the progress they were making in conserving the livestock interests, and hoped that every member would do all that was possible to assist the board in its efforts to make and build up a biological laboratory that the veterinarians would be proud of, and hoped they would interest their congressmen so that they could get a larger appropriation to work with.

Dr. James Wright, State Veterinarian, spoke on the general conditions of live stock matters in the state, and deplored the fact that it seemed impossible to get laws to protect the livestock interests of the state and to prevent the shipping into the state diseased cattle from other states, and advised all veterinarians to get their representatives to pledge themselves to support measures that would remedy the present existing conditions.

A resolution was presented by Drs. Martin, Nattress and Stringer thanking the State Board of Live Stock Commissioners for their entertainment and the bountiful luncheon they had provided. Also to Drs. Mattitall and Juckiness for their assistance; Dr. Peters for the thorough manner in which the program was carried through, and the able demonstrations he presented; also to Dr. Niles for his valuable assistance; also to the ladies of Springfield for their kind hospitality.

On motion, the resolutions were adopted.

The following were read and, on motion, were allowed:

Printing, $3,225; stamps, mailing, express, etc., $14.10; secretary's salary, $25.

The following delegates were then selected to represent the Association at the A. V. M. A. meeting in September: Dr. Joseph Hughes, Dr. L. A. Merillat and Dr. W. A. Martin.

On motion the by-laws were suspended and twelve petitions were presented for membership and the secretary was instructed to cast the ballot of the Association for their election. They were accordingly elected.

The president closed the session with a few remarks on the success of the meeting; and it was the unanimous opinion that it was the most successful meeting in the history of the Association.

The meeting was then adjourned subject to the call of the president.

J. H. CRAWFORD,
Secretary.

ONTARIO VETERINARY ASSOCIATION.

In accordance with a resolution passed at the last annual meeting held in December, 1909, this meeting was held on August 4, 1910. The meeting was held in the lecture room of the Ontario Veterinary College, Toronto. Dr. C. S. Brind, of Woodstock, the president of the association, in the chair.

The minutes of the previous meeting were read and confirmed.

The secretary-treasurer's and auditor's reports were received and adopted.

The treasurer's report showed three fines of $25 each, having been received amounting to $75. These fines were collected from men for infringements of the "Ontario Veterinary Act."

The president made a few remarks regretting the absence from the meeting of the late principal of the college, Dr. Andrew Smith, owing to illness, and called on Dr. E. A. A. Grange, principal of the Ontario Veterinary College, to address the meeting.

Dr. Grange on rising made a few introductory remarks as to the profession in general. He spoke of the honor recently conferred on Dr. J. G. Rutherford, Veterinary Director General, by his Majesty the King, and said that both from the standpoint of our association, as well as our profession, he would advise that a committee be formed to pass a resolution of congratulation to Dr. Rutherford. In his remarks he referred to the Ontario Veterinary College, its course and examinations. The closing exercises were held at the university. The meeting was addressed by President Falconer, whose address was highly appreciated. The examinations held by the Department of Agriculture (Health of Animals Branch), also the state and provincial examinations of

graduates of the Ontario Veterinary College were very highly spoken of. He remarked on the unfairness of the report of the United States government in relation to the Ontario Veterinary College, and advised members of our association to read some articles written and published by Dr. J. P. Foster, State Veterinarian of Huron, S. Dakota, a graduate of said college.

Dr. J. G. Rutherford, Veterinary Director General, on rising to give a report on the recent outbreak of rabies in Ontario, as requested, said he had received a large number of letters and petitions on the cruelty of "muzzling the dog." He advised the reading of his pamphlet published on rabies, also the reading of recent reliable authorities on the disease. He made some general remarks on the outbreaks of the disease in this province, and its frequency, and gave statistics.

In the year 1907 eighteen premises were quarantined in the counties of Lincoln and Welland. In 1908 forty-two premises were quarantined in Welland, Haldimand, Brant and Oxford. In 1909, 146 cases in Brant, Wentworth, Oxford and Waterloo.

In 1910, in January, 41 cases were reported; February, 74; March, 63; April, 31; May, 30; June, 31; July, 5. Total number of animals lost exclusive of dogs and cats, from May, 1907, to July, 1910, was 5 horses, 84 cattle, 26 sheep and 33 swine. He remarked strongly regarding the necessity of dealing rigorously with the disease, and owing to the action of the government, this financial loss in animals cannot be considered excessive.

He received many letters from parties wishing to remove dogs from one place to another in quarantined districts. But we must consider the danger of the disease getting into the wild animals.

Considerable discussion ensued. It was believed that this last outbreak of the disease was brought into this province by a dog from the United States. Why not quarantine from the United States? Dr. Rutherford explained the difficulties in doing so. He could not see his way clear to establish a quarantine between this country and the United States.

An animated discussion then took place in connection with the Bacteriological Department. One hundred and seventy-four heads of dogs had been sent there for examination for rabies. Dr. Rutherford said he had cast no reflection whatever on that department.

At the kind invitation of Dr. Grange, the meeting adjourned for luncheon.

Meeting reopened after luncheon at 2.15 p. m.

The following motion was brought forward: "The association was much interested in the explanations on rabies given by Dr. Rutherford, Veterinary Director General, and strongly approves of the action of the government, which has been called the "muzzling orders" and other methods, adopted for the prevention of its spread." On motion of Dr. E. A. A. Grange this was carried by a rising vote.

Dr. Jas. A. Campbell read a good paper on "Rabies: Its Cause and Mode of Infection, Its Symptoms, Post-mortem Conditions That May be Found, and the Pasteur Treatment for a Person Bitten by a Dog Supposed to be Rabid." The subject of better legal protection for our profession was then brought forward. Dr. Cowan insisted that this association should demand from the government that a bill be passed for the better protection of our profession.

Dr. Mole read a letter from the Hon. Mr. Duff, in which he stated that opposition to the bill was so great that it was advisable to drop it, at least for this session.

After some discussion, in which several took part, Dr. Grange said that he did not think it necessary to call a meeting of the association for the purpose of pushing onward this matter at the present time; but that if thought advisable, the Legislative Committee could do so, as from his knowledge the government had not dropped the required legislation.

It was ultimately moved, seconded and carried, that "the Legislative Committee now in existence be authorized to hold office, and if thought necessary, call a special meeting of the association."

It was moved by Dr. Duncombe, seconded by Dr. Elliott and carried, "that the present officers of the association continue in office until the next annual meeting."

Moved by Dr. Tennant, seconded by Dr. Mole, and carried, "that the secretary be instructed to send a letter to Dr. A. Smith expressing our sorrow for his sickness and his inability to attend this meeting."

It was moved by Dr. Grange, seconded by Dr. Cowan, and carried, "that a committee of three be appointed to draft a resolution of congratulation to Dr. Rutherford, Veterinary Director General, on the honor recently conferred on him by His Majesty King George the Fifth." This was carried by a rising vote.

Dr. Grange, Dr. Cowan and Dr. Elliott were the committee appointed.

Dr. Mole read an interesting paper on "Intestinal Diseases," and the meeting adjourned.

C. HEATH SWEETAPPLE, V. S., Secretary.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The first yearly meeting of the Keystone Veterinary Medical Association was held on the evening of October 11, 1910, at Donaldson Hall, Philadelphia, Pa. Fifteen members responded to the roll and there were about thirty visitors present. Two new members were admitted to the association.

The election of officers took place and resulted as follows: President, Dr. J. Reichel, Philadelphia, Pa.; Vice-president, Dr. J. Vansant, Fox Chase, Pa.; Secretary-Treasurer, Dr. E. H. Yunker, Philadelphia, Pa. Board of Censors—Drs. W. H. Hoskins, C. J. Marshall, T. Kelly, H. C. Campbell and A. W. Ormeston.

The program for the evening comprised an address by Drs. W. H. Hoskins and C. J. Marshall upon their trip to the A. V. M. A. meeting, and the progress of the veterinary profession in the West.

A paper was presented entitled "The Examination of the Fæces of Forty Cattle for Tubercle Bacilli and Conclusions," by Drs. J. Reichel and E. S. Deubler. After an interesting discussion on the above paper the meeting was adjourned.

ELKAN H. YUNKER, Secretary.

DR. J. F. DE VINE, Goshen, N. Y., will address the members of the Veterinary Medical Association of New York City on the evening of November 2.

DR. J. C. NORTON of Phoenix, Arizona, says: "I cannot do business without the REVIEW. I always put it in my grip when I go off on railroad trips and read it thoroughly instead of train literature."

NEWS AND ITEMS.

VETERINARIAN

Examination Nov. 23, 1910.

The United States Civil Service Commission announces an examination on November 23, 1910, at the places mentioned in the list printed hereon, to secure eligibles from which to make certification to fill two vacancies in the position of veterinarian in the Quartermaster's Department, at $1,200 per annum, one at Honolulu, Hawaii, and the other at San Juan, Porto Rico, and vacancies requiring similar qualifications as they may occur in any branch of the service, including the Philippine service, in which the entrance salary is $1,600 per annum, unless it shall be decided in the interest of the service to fill either or both of the specific vacancies mentioned by reinstatement, transfer, or promotion.

The examination will consist of the subjects mentioned below, weighted as indicated:

Subjects.	Weights.
1. Letter writing	10
2. Veterinary anatomy and physiology	20
3. Veterinary pathology	20
4. Veterinary practice	40
5. Training and experience	10
Total	100

Applicants must show that they are graduates of reputable veterinary colleges.

Age limits for the Federal service, 20 years or over on the date of the examination. For the Philippine service, applicants must have reached their eighteenth birthday, but not their fortieth birthday, on the date of the examination.

Appointees in the Philippine service are allowed field expenses when absent on duty from their permanent stations.

Examination Form 1312 is required for the Federal service.

Examination Forms 2 and 375 are required for the Philippine service.

The medical certificate in Form 2 for the Philippine service must be filled in by some medical officer in the service of the United States. Applicants should appear before medical officers of the Army, Navy, Indian, or Public Health and Marine Hospital Service. If such an officer can not be conveniently visited, a pension-examining surgeon may execute the certificate. Special arrangements have been made with pension-examining boards throughout the country to give such examination for a fee of $2, to be paid by the applicant. This certificate must not be executed by the family physician of the applicant. The medical officer should indicate his rank or official designation on such certificate.

Each applicant for the Philippine service will be required to submit to the examiner on the day of examination a photograph of himself, taken within three years, which will be filed with his examination papers as a means of identification in case he receives appointment. An unmounted photograph is preferred. The name, date and place of examination, the examination number, and the competitor's name, and the year in which the photograph was taken should be indicated on the photograph.

Applicants may be examined for both services upon filing the proper forms.

This examination is open to all citizens of the United States who comply with the requirements.

This announcement contains all information which is communicated to applicants regarding the scope of the examination, the vacancy or vacancies to be filled, and the qualifications required.

Applicants should at once apply to the United States Civil Service Commission, Washington, D. C. * * *. No application will be accepted unless properly executed and filed with the Commission at Washington. In applying for this examination the exact title as given at the head of this announcement should be used in the application.

As examination papers are shipped direct from the Commission to the places of examination, it is necessary that applications be received in ample time to arrange for the examination desired at the place indicated by the applicant. The Commission will, therefore, arrange to examine any applicant whose application is received in time to permit the shipment of the necessary papers.

Issued October 20, 1910.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alumni Ass'n, N. Y.-A. V. C.	.....	141 W. 54th St.	J. F. Carey, East Orange, N. J.
American V. M. Ass'n.	....	.....	C. J. Marshall, Philadelphia.
Arkansas Veterinary Ass'n.	.....	.....	Horace E. Rice, Little Rock.
Ass'n Médécale Veterinare Française "Laval"	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.	2d Fri. ea. mo...	Chicago.	H. A. Smith, Chicago, Ill.
California State V. M. Ass'n.	.....	San Francisco.	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.	.....	Ottawa	A. E. James, Ottawa.
Chicago Veterinary Society.	2d Tues. ea. mo	Chicago	D. M. Campbell Chicago.
Colorado State V. M. Ass'n.	.....	Denver	M. J. Woodliffe, Denver.
Connecticut V. M. Ass'n.	1st Tues. Feb. '11	Hartford.. ...	B. K. Dow, Willimantic.
Genesee Valley V. M. Ass'n.	....	.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.	Dec. 21, 22, 1910.	Atlanta.....	P. F. Bahnsen, Americus
Hamilton Co. (Ohio) V. A.	.....	.....	Louis P. Cook, Cincinnati.
Illinois State V. M. Ass'n.	Dec. 6, 7, 1910...	Chicago.....	J. H. Crawford, Harvard.
Illinois V. M. and Surg. A.	.....	.....	F. Hockman, Louisville.
Indiana Veterinary Association...	Jan. 11, 12, 1911..	Indianapolis..	E. M. Bronson, Indianapolis
Iowa Veterinary Ass'n.	.....	.....	H. C. Simpson, Denison.
Kansas State V. M. Ass'n...	Jan. 10, 11, 1911.	Topeka	B. Rogers, Manhattan.
Kentucky V. M. Ass'n.	.....	Not decided ..	D. A. Piatt, Lexington.
Keystone V. M. Ass'n.	.....	.....	E. H. Yunker, Phila.
Louisiana State V. M. Ass'n.	.....	.....	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n	.....	.....	C. L. Blakely, Augusta.
Maryland State Vet. Society.	.....	Baltimore.....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.	Monthly.....	Boston.....	Wm. T. White, Newtonville.
Michigan State V. M. Ass'n.	Feb. 7, 8, 1911...	Mich. Arg. Col.	Judson Black, Richmond.
Minnesota State V. M. Ass'n.	Jan. 12, 13, 14, 1911.	St. Paul.	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.	.....	.....	J. C. Robert, Agricultural Col.
Missouri Valley V. Ass'n.	Feb , 1911.....	Kansas City..	Hal. C. Simpson, Denison, Ia.
Missouri Vet. Med. Ass'n	.....	.....	D. L. Luckey,
Montana State V. M. A.	.....	Helena.....	W. S. Swank, Miles City.
Nebraska V. M. Ass'n.	.....	Grand Island.	H. Jensen, Weeping Water.
New York S. V. M. Soc'y.	Aug. 1911.....	Brooklyn	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.	.....	.....	W. G. Chrisman, Raleigh.
North Dakota V. M. Ass'n.	Jan. 1911.....	Fargo	C. H. Martin, Valley City.
North-Western Ohio V. M. A.	Feb and Nov. in each year.	Lima.	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.	.....	.....	O. V. Brumley, Columbus.
Ohio Soc. of Comparative Med..	Annually	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Oklahoma V. M. Ass'n.	.....	.....	R. A. Phillips, Oklahoma City
Ontario Vet. Ass'n.	.....	.....	C. H. Sweetapple, Toronto.
Passaic Co. V. M. Ass'n	Call of Chair...	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Pennsylvania State V. M. A.	.....	.....	F. H. Schneider, Phila.
Philippine V. M. A.	.....	.....	Chas. G. Thomson, Manila.
Portland Vet. Med. Ass'n.	4th Tues. ea. mo.	Portland, Ore.	Peter Hanson, Portland, Ore.
Province of Quebec V. M. A.	.....	Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.	Jan. and June..	Providence ...	J. S. Pollard, Providence
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo
Schuylkill Valley V. M. A.	Dec. 21, 1910....	Reading.....	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.	.....	Philadelphia..	B. T. Woodward, Wash'n, D. C
South Dakota V. M. A.	2d Tues. July '11	Watertown...	S. W. Allen, Watertown.
Southern Auxiliary of California State V. M. Ass'n.	Jan. Apl. Jy. Oct.	Los Angeles..	A. D. Hubbell, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp..	4th Tues. ea. mo.	407 Ill. Ave....	H. R. Collins, So. St. Joseph
Tennessee Vet. Med. Ass'n.	.....	.....	A. C. Topmiller, Murfreesboro
Texas V. M. Ass'n.	Call Exec. Com.	.....	R. P. Marsteller, College Sta.
Twin City V. M. Ass'n.	2d Thu. ea. mo .	St. P.-Minneap	S. H. Ward, St. Paul, Minn.
Vermont Vet. Med. Ass'n	....	....	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta... ..	.....	.....	C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	514—9th St., N. W.....	M. Page Smith, Wash., D. C
Vet. Ass'n of Manitoba.....	Not stated.....	Winnipeg.....	F. Torrance, Winnipeg.
Vet. Med. Ass'n of N. J.	.....	.....	W. Herbert Lowe, Paterson.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	W. Reid Blair, N. Y. City.
Veterinary Practitioners' Club....	Monthly	Jersey City ...	A. F. Mount, Jersey City.
Virginia State V. M. Ass'n	Jan. 13, 1911.....	Richmond	W. G. Chrisman, Raleigh.
Washington State Col. V. M. A ..	1st & 3d Fri. Eve	Pullman.....	R. G. McAlister, Pullman.
Washington State V. M. A.	.....	Seattle.....	J. T. Seely, Seattle.
Western Penn. V. M. Ass'n.....	1st Wed. ea. mo.	Pittsburgh....	F. Weitzell, Allegheny.
Wisconsin Soc. Vet. Grad	Jan., 1911.....	Madison.....	J. P. West, Madison.
York Co. (Pa.) V. M. A.....	Dec. 6, 1910.....	York.....	E. S. Bausticker, York, Pa.

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